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## ESSAYS, MONOGRAPHS, AND CASES.

*Selections from Favorite Prescriptions of Living American Practitioners.* By HORACE GREEN, M.D.

### *Excitants and Alteratives. (Continued.)*

We have spoken of the valuable properties of the *proto-iodide* of *mercury*, especially when this salt is administered with the iodide of potassium. There are several other salts, the product of iron and its combinations, which are medicinal agents of great value. The therapeutic action of these compounds is various. The iodide of *iron* acts as a *tonic*; the iodide of *mercury*, as we have stated, operates as an *alterative*; the iodide of *arsenic*, as an *excitant* and *tonic*; the iodide of *lead* as a *diuretic*; and the iodide of *sulphur*, acts most decidedly on the skin.

R	Arsenici Iodidi	gr. iij
	Extract Conii	3ss

Misce; Fiant pilulæ xxx quorum sumantur una ter in die.

This medicine, after many other remedies have failed, has been employed with great success, in the treatment of some most inveterate cases of certain chronic cutaneous disease; particularly lepra, psoriasis, and venereal eruptions. The dose may be cautiously increased to the  $\frac{1}{2}$  of a grain, three times a day. When gastric disorder supervenes, the medicine

should be for a time suspended, and be subsequently renewed in the original dose.

Some practitioners in this country employ, with success, in the same affections, a combination of a solution of the arsenite of potash, and of the compound solution of iodine ; as in the following extemporaneous preparation :—

R	Liquor. Potassæ Arsenitis	℥ij
	Liquor. Iodidi Potassii Comp.	℥ss

Fiat mist. ejus cap. gtt. v. ter. in die.

Both of the above preparations of iodine and arsenic are employed with great advantage, in the treatment of cancerous affections, particularly when these remedies are conjoined with the use of the following ointment of the iodide of lead, employed as an external application :

R	Plumbi Iodidi	℥ij
	Axungiæ	℥ij
	Misce intim.	

A small amount of this ointment may be rubbed in, twice a day, over cancerous, or other indolent tumors.

Under the head of *Tonics* and *Stimulants*, we have spoken of the therapeutic value of the iodide of *manganese* in the treatment of cancerous affections, glandular enlargements, and some other obstinate diseases. We have had prepared by an excellent apothecary of this city, after the formula of Proctor, a *syrup of the iodide of manganese*, which, as an excitant and alterative, is superior to the syrup of the iodide of iron, in the treatment of many diseases. This medicine—the syrup of the iodide of manganese—may be readily prepared in the following way :—

R	Manganesii sulph.	℥xvj
	Potass. Iodidi	℥xix

Dissolve the manganese and the potassium separately, each in three fluid ounces of water, to which are added two fluid drachms of syrup. When the precipitation of the crystals of sulphate of potassa, which will follow, is completed, filter the supernatant liquor through a fine muslin into a vessel containing *twelve ounces* of pulverized sugar. Then add to this, water sufficient to make the whole amount to *one pint*. Shake until the sugar is well dissolved, and keep the syrup in a glass-

stopped bottle. In tuberculosis, in scrofulous and cancerous affections, in the treatment of glandular enlargements, such as those of the spleen and of the neck, and in constitutional syphilis, the syrup of the iodide of manganese, administered in doses of from ten to twenty drops, twice or thrice a day, will be found to be a valuable remedial agent.

As *alterative* remedies, the preparations of *mercury* are more employed by practitioners, than any of the other inorganic agents. Administered in small doses, the *bi chloride* of mercury is a valuable excitant. Its effects are more decidedly *alterative*, says Neligan, than those of any other preparation of the metal. In cases of chronic follicular disease, where the symptoms indicate the presence of a thickening of the mucous membrane of the larynx, and in the early stage of some forms of pulmonic disease, we have found the bi-chloride of mercury a most efficient alterative, and altogether one of the best therapeutic preparations of this mineral.

R Hydrarg. chlorid. corrosiv. gr. iv  
Extract. Conii ðij

Fiat massa. in pilulas quadraginta divide. Sumat unam, mane et nocte.

An experienced practitioner affirms that in hepatization of the lungs, the solid matter deposited in the air-cells is often absorbed and the cells rendered permeable to air by the use of this preparation. In irritable subjects, opiates should be conjoined with this remedy, as the mucous membrane of the stomach and bowels is sometimes irritated by its use.

R Hydrarg. chlorid. corrosiv. gr. iv  
Extract. Opii gr. x  
Extract. gentian. ðij

Misce ; Fiant pilulæ xl. quorum sumatur unam bis terve in die.

This preparation has also been highly extolled in secondary venereal affections, in chronic cutaneous diseases—particularly those which are attended with dry, scaly eruptions—and in chronic rheumatism and arthritis. The following is the formula of Dzondi of Halle, who is a great advocate for the use of the bi-chloride of mercury :—

R Hydrarg. chlo. corrosiv. gr. xii  
Solve in aq. distil. q. s.  
Adde micæ Panis albi.

Saccharis albi aa q. s. ut. fit pilulæ numero cxxl.

Of these pills—each of which contains the twentieth of a grain of the mercury—two may be given night and morning.

In many of the above chronic forms of disease, this medicine is advantageously administered, conjoined with a vegetable bitter tonic :—

R	Hydrarg. chlo. corrosiv.	gr iv
	Tinct. Gentianæ	ʒiv
	Syr. Aurantii	ʒij

Misce ; quorum date coch. parv. ter. in die.

As an excitant and an alterative, in many of the diseases in childhood, the hydrargyrum cum creta has been more universally employed than any of the other preparations of this mineral. It is, however, like the blue mass, not always a perfect preparation, as it consists of metallic mercury in a state of minute division, mechanically combined with the sub-oxide of mercury, and the carbonate of lime. But it has not been ascertained in what proportions the metal and the oxide exist.

As a gentle and more certain laxative and alterative, and one equally well adapted for infancy and childhood, some eminent American practitioners prefer, altogether, the *chloride of mercury* minutely subdivided by being thoroughly triturated with a large amount of sugar.

To one part of calomel add ten parts, by weight, of white sugar.

R	Hydrarg. chlorid. mitis,	ʒi
	Sacchari alb.	ʒx

Triturate the two substances in a wedgewood mortar for ten or fifteen minutes, so as to subdivide minutely, and intimately blend, the calomel and the sugar.

Those who have never tried the mercury thus prepared, will be surprised at the increased activity which will be imparted to the medicine, by this fine subdivision of its particles. Indeed, it is to this well-established fact, that many medicines become much more active by minute subdivision, that the whole secret of the Hahnemannian "potency," or dynamization of remedies, may be referred.\*

\* The editors of the "British Journal of Homœopathy," admit, in a late number of this Journal, "the theory of dynamization to be untenable, and that it is now rejected by the great majority of Hahnemann's disciples."—*Journal of Homœopathy*, July, 1852.



Five grains of the above preparation, will contain half a grain of calomel, and this small amount, taken on going to bed, will produce, with most persons, a mild laxative effect, the following day. With young children, half this amount, or from two to three grains of the medicine placed on the tongue, (and children take it as readily as they will pure sugar,) will be sufficient, ordinarily, to prove cathartic.

A physician of this State, of large experience, who practices in a region of the country where dysentery prevails as an endemic almost annually, assures us that this preparation of calomel is his favorite, and most efficient remedy, in the treatment of dysentery in children. He administers *one grain* of the powder, once in four or six hours; employing, at the same time, injections of a solution of morphia, to control the dysenteric discharges. With this plan of treatment he has succeeded, he affirms, in arresting the disease more frequently than with any other method.

More than twenty years ago, we were instructed by our preceptor—who has since been a distinguished lecturer and writer on *Materia Medica*—to employ the following combination, as our “official” preparation of calomel :

R	Hydrargyri chloridi mitis,	3ij
	Extract. opii.	
	Ipecac. pulv.	aa gr. vj

Pulverize, and mix intimately and thoroughly, as in the preceding combination.

Thus prepared, every scruple of calomel will contain one grain each of opium and ipecacuanha, intimately combined with the mineral.

During a period of twenty years, we have used no other preparation of calomel than the above in our practice. We have recommended its employment in our lectures to the students and graduates of the N. Y. Medical College, and to many physicians, who have adopted its use; and we venture the assertion, that no practitioner, after having once employed this combination will prefer, afterwards, to prescribe pure calomel in the treatment of disease. Under all circumstances, a given amount of this combination, whether administered as a laxative or an alterative, will prove fully as efficient as double the amount of pure

or uncombined calomel; and without producing—whether given to children or adults,—at all that degree of irritation, which ordinarily follows the administration of the latter. As a laxative, from three to five grains may be administered to an adult, and from one and a half to three grains, to children.

Besides the excitants and alteratives which are obtained from inorganic substances, there are some important therapeutic agents of this kind belonging to the organic or vegetable kingdom, which are of much value.

The extract of *Podophyllum*, or *May-apple*, is much used as a remedial agent by physicians in some parts of this country; and when the remedial value of the preparations of this plant are better known, they will be still more extensively employed by the profession.

R.	Extracti Podophylli	ʒj
	Extract. Aloës Hepat.	ʒiij
	Gambogiæ	ʒj

Misce : Fiat pillulæ lx.

The above constitutes excellent alterative and cathartic pills, and may be administered with great advantage in cases of hepatic derangement, in anasarca, and in all glandular diseases.

The following is the favorite cathartic pill of an eminent practitioner of Connecticut :—

R.	Extracti Podophylli	ʒij
	Hydrarg. Chlorid. mitis	ʒv
	Olei Cajuputi gtt.	vj

M. Fiat massa, in pillulas lx. div.

Instead of the extract we have recently employed the *podophyllin*, which is the active principle of the plant, obtained from its root, and which from the commendation of several of our professional friends and from the trial we have ourselves made, we are confident will prove to be an addition to our *Materia Medica*, of great value.

Judiciously administered, it is a superior excitant and alterative, and in appropriate doses, a certain and safe cathartic. Care should be taken not to prescribe this remedy in too large doses, as it is apt to produce griping and nausea when thus administered. This, however, is said to be effectually prevented by combining the medicine with a diffusible stimulant.

R. Podophyllin	gr. xv
Zinizberis pulv.	3ss
Ext. Gentianæ	3ss

M. Fiat mass. et in pillulas xxx div.

These pills may be administered in all cases in which the blue mass or other mild mercurials are given. This remedy has been highly recommended in cases of secondary syphilis, when mercury has been long continued or is from any cause inadmissible. Administered in a full cathartic dose it is declared to have been eminently successful in the expulsion of ascarides; and also, when thus administered and followed in four or six hours with a full draught of olive oil to the amount of four or six ounces podophyllin has proved successful it is said, in many instances, in the dislodgment and expulsion of large quantities of biliary calculi, with very little pain. Triturated with sugar in the same manner as we have recommended calomel to be prepared, podophyllin is a most excellent laxative and alterative.

R. Podophyllin	3j
Sacchari albi	3xix

Mix and triturate until the two be finely subdivided and thoroughly blended. As a mild laxative and alterative, this powder may be exhibited in doses of from five to ten grains. The medicine may be given in all cases where mercurials are indicated.

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*Cholera Infantum. Remarks on the Prize Essay by JAMES STEWART, M.D. By GCH, Dayton, Ohio.*

Few, who read this Essay, will rise from its perusal with their anticipations fully realized. Coming, as it does, from a Medical Association, aiming to be the most learned, if not the most exclusive of any on this continent, it falls short of what might be expected. The announcement, during the past year, that the New York Academy of Medicine had offered a prize for the best dissertation upon Cholera Infantum, excited professional anticipation—especially in the middle latitudes of the United States—in no small degree. As the time drew near for the annual incursion of this disease, those whose repeated

failures in the treatment of it had aroused the suspicion that our views concerning the nature and treatment of the affection were not based upon sound medical philosophy, naturally turned to the forthcoming work, with a lively hope that, through it, our understandings might be enlightened upon the nature, pathology, and treatment of cholera infantum; confidence be restored to the physician; and security guaranteed to the nursery, against the ravages of a fearfully fatal disease. This hope gained strength in a knowledge of the fact, that ample facilities are now offered in the public charities of our large cities for the study of this disease, and upon the supposition that the opportunities thus furnished, had been turned to a good account by those whose fortune it had been to enjoy them.

The prize has been awarded, and the Essay published, for the accommodation of the members of the Academy of Medicine only, and not for general distribution among physicians; and if any apology is necessary, this fact shall be my excuse for reproducing the leading features of the paper, with the addition of such comments as the nature of the subject appears to demand.

After alluding to the endemic nature of cholera infantum, and the unerring certainty of its appearance in the cities throughout the land at each returning Summer, the essayist proceeds to consider somewhat formally, the *etiology* of the affection. "There is no disease which appears to demand so close an investigation of this nature, for there is none which has its pathology so intimately connected with the action of the agencies which are in constant exercise in its production, and in its maintainance throughout its course. The combination of these active agents—constituting what is known as climate, the more special local agents, and the physiological peculiarities of the period of life at which the disease occurs—it will be seen, are all connected in the production and maintainance of the same pathological results, so formidable in their action, and so obstinate in their management. These circumstances are not to be regarded as mere isolated facts, but as an important group, which are essential, when connected with the phenomena of the disease and its morbid anatomy, to illustrate the morbid condition of the system: none of them can be separated

without impairing the relations they bear to the nature of the disease."

Foremost among the agencies producing cholera infantum, the author places *atmospheric heat*. This has attended the development of the disease with scarcely an exception, in New York; the increasing heat keeping pace with the increasing number of seizures. In 1816, he informs us, that but one death of the above disease is officially recorded in that city. This Summer was singularly cold, the thermometer, up to the 25th of July, indicating  $15^{\circ}$  or  $20^{\circ}$  less heat than usual, during the same period in other years. Without attempting to follow the essayist in his deviations upon this subject, I will state briefly, that he considers the primary action of heat upon the economy of infancy in producing summer complaint, to be upon the lungs. It operates in "interfering with the proper discharge of the respiratory function, this act being the introduction of oxygen during inspiration, and the ejection of the carbonic acid during expiration."

*Excessive humidity of the air* is assigned as a second element in the causation of cholera infantum. This department of the Essay is characterized by some research, and constitutes the leading feature of interest in it. Humidity is just at this time attracting considerable attention as a source of zymotic diseases, and the author of the paper under consideration, applies what is known upon the subject, with much appropriateness, to cholera infantum.

"The temperature, at which moisture is deposited, is usually taken to ascertain the amount of moisture in the air. When the temperature of deposit, or, as it is termed, the dew-point, is high, and especially when it continues high for some time in hot weather, the system feels its depressing influence. All persons suffer from a sensation of lassitude and sweltering oppression at such times; and no class equal to young children.

"In our investigations upon the subject of atmospheric humidity, and its relations to the disease under consideration, we have examined various localities, and found, as was expected, that a great difference existed. \* \* \* After careful comparison, we have come to the conclusion, that ordinary climatic

humidity has but limited influence in the development of cholera infantum.

"The same amount of moisture often exists in country places as is found in the city, and where the disease was never known to originate. We therefore directed our attention to the occasional state of the dew-point as it occurred where the disease was most prevalent, and discovered a great difference within doors, between it and the general dew-point of the external air, continuing often for a long time.

"The first observtion made, was that the moisture was always greater nearer the surface of the earth; the difference we have ascertained at times to be  $4^{\circ}$ . Cellars and basements must therefore always be in a state of excessive humidity, as is known to most persons, requiring no philosophical instrument for its detection.

"The second is, that in very hot weather in excessively crowded houses at night, when all are within, the dew-point is very nearly at the temperature of the air; consequently, the air is saturated with moisture. With a temperature of  $90^{\circ}$  or  $95^{\circ}$ , and a dew-point in a crowded room almost equal to the temperature, a feeling of suffocation is experienced, which is easily accounted for, when it is known that the dew-point of the breath as it is expelled from the lungs is  $94^{\circ}$ , and that the mean dew-point of the atmosphere is  $38^{\circ}$ ; and also, that in the hottest weather it rarely exceeds  $70^{\circ}$ . When the air is loaded with moisture and deposited at a temperature approaching that of the living body, inspiration is difficult and unsatisfactory, while the system suffers great depression. \* \* \* \* \*

"The air always contains moisture, and in proportion to the amount is the quantity exhaled from the lungs. Thus, air containing moisture that is deposited at  $38^{\circ}$ , the average of this climate, will allow a much greater evaporation from the lungs than when the temperature of the dew-point is at  $70^{\circ}$ .

"It has been shown by the experiments of Dalton, that the quantity of vapor contained in a cubic inch of air when the dew-point is  $38^{\circ}$ , is .00166852 grain; when at  $94^{\circ}$ , the amount is .00938243 grain. The last mentioned is the dew-point as it is expelled from the lungs whatever may be the temperature of the surrounding air, and this is the amount of vapor contained

in a cubic inch of air as it passes from the lungs of an adult. If the air before inspiration be overloaded with vapor, it is obvious that it must prevent to a certain extent, the depuration from the lungs. We have found, however, that unless the amount of vapor in the air very nearly approaches that passed from the lungs, no very marked effects are produced, but a sense of oppression and suffocation arises when it approaches that point.

"The weight of a cubic inch of vapor at  $88^{\circ}$ , is .00789288 grain, which is .00622436 more than the mean of the climate, and .00158153 less than the amount contained in the pulmonary vapor. If these be multiplied by 1-152,800, the number of cubic inches inhaled in a day by an adult, according to Thompson, Menzies, and others, the result will be respectfully, 7170 and 1811 grains; the difference between the two—5359 grs.—will give the lessened amount of transpired pulmonary vapor. When at  $70^{\circ}$ , the highest in this climate, the weight of a cubic inch of vapor is .00461639; if this be subtracted from .00938243, which is the quantity in a cubic inch of respired air, it will leave .00476604, which, multiplied by 1-152,000 will give 5490 $\frac{1}{2}$  grains of water evaporated from the lungs, when the air is inhaled at a dew-point of  $70^{\circ}$ . These statements will show how much an excessively high dew-point must interfere with a proper depuration of the lungs.

"Another source of embarrassment to a full depuration of the lungs, is the increased elastic force of air at a high temperature. According to Dalton, this power, at  $38^{\circ}$ , is .264, and at  $88^{\circ}$ , 1,286 inches of mercury. There are, therefore two obstacles to a free exhalation from the lungs in an inordinately moist state of the air."

The foregoing elements—heat and moisture of the air, constitute, according to the author, the primary link in the pathology of cholera infantum. They jointly conspire, by preventing the due decarbonization and depuration of the blood, to the production of a vitiated condition of the vital fluid, which is inimical to health. The effete matter which seeks an outlet through the lungs, but is prevented from gaining exit through this avenue by the circumstances above detailed, must be removed by the vicarious action of some organ adapted to the work. The liver is best fitted for this purpose, and when a persistent



tax is thus imposed upon it, in ridding this fluid of its superabundance of carbonaceous matter, a diseased function, and change of its minute structures will almost surely follow. This constitutes the second link in the pathological chain of the disease under consideration.

It is unnecessary to follow the author through several pages of recorded circumstances and incidents drawn from various authors on derangements of the lungs and liver, to establish the vicarious action of the liver in hot climates and seasons. I will therefore give the following paragraph, which sets forth his views fully upon this subject: "There being no proof that the active cause of cholera infantum directly affects the mucous membrane of the intestines, but abundant evidence that they do produce a morbid change in the liver—congestion and inflammation, this organ is probably the first of the abdominal viscera that is affected in the disease, by the establishment of a vicarious action; the lungs not freely relieving the system, and the liver being a supplementary organ, performing a part of their function."

The third link in the pathology of cholera infantum, is disease of the mucous surface of the intestines. This is the immediate result of a stasis of the portal circle, depending upon a morbid action primarily established in the liver. In aiding an easy transition from the physiological to a pathological condition of the mucous crypts of the intestines, the author avails himself of the rapid development which is going on in these parts during the progress of dentition. This *period of dentition* he records among the predisposing causes. "The follicles, in the natural course of development, having just passed into a state of activity, are thereby prepared to have an additional or excessive development on the application of sufficient causes; and then the transition is both rapid and easy from a healthy to a diseased state.

"The normal follicular action passing into an abnormal state, under the three atmospheric causes—heat, moisture, and malaria—of the diseases, is affected through the agency of the liver; which we have seen is the part on which all these causes exercise their power. They produce disease and alterations in its density and texture, and thereby the passage of blood, that is



returned through it from the intestinal surface, is obstructed. Congestion of the mucous membrane and its follicles take place, and nature seeks relief by an inordinate secretion from them, already in an exalted state of action. When morbid action is once established, congestion, inflammation, and ulceration is the course naturally to be expected.

"It appears, therefore, that cholera infantum is a disease connected with the development of the body, and is the most remarkable instance of the relation subsisting between the growth of parts, and the diseases of childhood and infancy."

"Inappropriate food" and the "malaria of large cities," are the remaining causes which, according to Dr. Stewart, are essential to the development of cholera infantum.

This theory of the remote action of atmospheric agencies operating through the lungs and liver in developing congestion, inflammation, and ulceration of the mucous follicles of the intestines, is to say the least of it, attractive and plausible, and is calculated to impress the superficial observer, as highly probable. But unfortunately for the author, it lacks facts to sustain it: indeed, the whole *record* is against any such assumption. The author's idea in reference to the successive steps in the causation of cholera infantum, according to his statements, appears to be this: A want of decarbonization and depuration of the blood by the lungs, superinduces a supplementary or vicarious action in the liver; a continuation of this superadded function, produces congestion or induration in this latter organ, and this condition is followed by remora of the portal circle, which, acting in turn upon the mucous follicles in a state of development, results in congestion, inflammation, and ulceration of these structures, and cholera infantum is the result. This state is supposed to be produced by heat, moisture, and malaria, existing in the atmosphere. Now taking these circumstances as our guide, let us see how much truth can be gathered from the author's theory.

In considering this subject, the fact must be constantly borne in mind, that well defined, distinct cholera infantum, is confined in a great measure to a belt of country, only a few degrees in width, embracing the central portions of the United States. Any theory therefore, which refers the cause of this disease to

agencies that are general and diffused in their action upon society, must necessarily prove fallacious. One law in etiology is, that effects will be distinct and active in proportion as the causes are palpable and concentrated upon the human economy. According to this principle, if Dr. Stewart's theory be correct, cholera infantum ought to prevail wherever a high temperature, humid atmosphere, malaria, and infancy existed jointly; and the severity of the disease should be in proportion to the activity of the combined causes. But this is not true. More children annually fall victims to cholera infantum between the parallels of  $35^{\circ}$  and  $45^{\circ}$  of North latitude, perhaps, than all the remaining portions of the inhabitable globe. These parallels embrace the southern portion of the temperate zone, the former,  $35^{\circ}$ , corresponding pretty generally throughout its eastern two-thirds across this continent, with the isothermal line of  $60^{\circ}$ . This latter line passes through the northern portions of the Carolinas, Georgia, Alabama, Mississippi, Arkansas, divides Texas about its centre, dips northward into the interior basin of Utah, strikes the Nevada and is deflected as high as the  $41^{\circ}$  North latitude, and finally emerges into the Pacific, from the coast range at the  $34^{\text{th}}$  North latitude. This defines with some degree of accuracy, the southern boundary of that region in which cholera infantum produces its greatest ravages. The appearance of the disease is by no means rare, however, in the warm zone; yet it seldom becomes unmanageable in this or any region South of the above line. Nor does cholera infantum extend entirely across the continent of America even in those latitudes where its greatest prevalence is exhibited. As we proceed to the West from the Atlantic, and approach the oceanic climate of the Pacific, the disease, as might be expected, again disappears; for reasons which will be assigned as operating in securing the inhabitants of the warm and hot zones, from the action of the disease under consideration.

By an examination of the climate of the region which is the peculiar habitat of cholera infantum, and contrasting it with that where the disease does not prevail, it will be found to present remarkable peculiarities. For instance, in New York, latitude North,  $40^{\circ} 42'$ , exhibits a range between the mean temperature of Summer and Winter of 41 degrees; Philadelphia,

latitude North  $38^{\circ} 40'$ , 44 degrees; Cincinnati, latitude North  $39^{\circ} 06'$ , 40 degrees; St. Louis, latitude North  $38^{\circ} 40'$ , 44 degrees; Baltimore, latitude North  $39^{\circ} 17'$ , 40 degrees; Rochester, latitude North  $42^{\circ} 45'$ , 41 degrees; and Chicago,  $41^{\circ} 52'$ , 42 degrees. Thus it appears, in all this vast range of country, the mean difference between the heat of Summer and the cold of Winter is about 43 degrees, and varies only 4 degrees or 5 degrees. As soon as we cross the isothermal line of  $60^{\circ}$  and enter the warm zone, the difference in this respect is strikingly apparent. To illustrate, Charleston, latitude North  $32^{\circ} 42'$ , only has a range of 29 degrees; Savannah, latitude  $32^{\circ} 5'$ , 27 degrees; Mobile, latitude North  $30^{\circ} 40'$ , 26 degrees; New Orleans, latitude North  $30^{\circ}$ , 24 degrees; Key West, latitude North  $24^{\circ} 32'$ , 12 degrees; San Francisco, latitude North  $37^{\circ} 48'$ , 9 degrees; and Monterey,  $36^{\circ} 63'$ , 7 degrees. The same is true when we cross the Atlantic, and examine the climate of the large cities of the East. Paris, latitude North  $48^{\circ} 50'$  furnishes a range of 27 degrees; London,  $51^{\circ} 53'$ , 22 degrees; Canton,  $23^{\circ} 8'$ , 28 degrees; and Edinburgh,  $55^{\circ} 57'$ , 19 degrees.

This fact is also rendered more apparent by tracing the parallels of latitude. San Francisco on the Pacific, St. Louis on the Mississippi, Norfolk on the Atlantic, Cadiz in Spain, and Lisbon in Portugal, all are situated about the 37th degree North latitude, and have respectively a mean annual temperature of  $55^{\circ}$ ,  $56^{\circ}$ ,  $59^{\circ}$ ,  $62^{\circ}$ , and  $61^{\circ}$ ; while the difference between the mean temperature of Summer and Winter is respectively  $7^{\circ}$ ,  $44^{\circ}$ ,  $36^{\circ}$ ,  $18^{\circ}$ , and  $18^{\circ}$ . The same is true, when the higher parallels of latitude in the temperate zone are examined and compared with those of the East. Boston, Mass., Chicago, Ill., Albany, N. Y., Marseilles, France, are situated on the 42d parallel of North latitude, and Fort Steilicom, Oregon, in latitude  $47^{\circ}$ , and have respectively, a mean annual temperature of  $48^{\circ}$ ,  $46^{\circ}$ ,  $48^{\circ}$ ,  $58^{\circ}$ , and  $50^{\circ}$ , while the thermometrical difference between the mean temperature of these places in the order of their enumeration, is  $41^{\circ}$ ,  $42^{\circ}$ ,  $45^{\circ}$ ,  $27^{\circ}$ , and  $16^{\circ}$ .

The above are significant facts and certainly furnish a clew to the etiology of cholera infantum. It thus appears, that the

central and eastern portions of the temperate zone of the United States, exhibit a mean thermometrical difference between the warmest and coldest meteorological seasons, doubling, tripling, and in some instances, quadrupling that of the western section of the same latitudes, of the warm and hot zones of this continent, and indeed, of European latitudes generally. But as striking as this may appear, they convey but an imperfect idea of the extremes that take place in the temperature of temperate zones. The Winter furnishes a degree of cold equal to that of Warsaw and St. Petersburg, and the Summer, the intense heat of the tropics. The mean range between the warmest and coldest day during the same year, amounts from  $83^{\circ}$  to  $90^{\circ}$  Fahrenheit, and the range between the maximum and minimum, is often equal to  $110^{\circ}$ , and  $115^{\circ}$  Fahrenheit. In the western districts of this zone, on the same parallels of latitude in California, the range between the maximum and minimum does not exceed  $54^{\circ}$  Fahr., and the same obtains in some portions of the transatlantic hemisphere. It is true, that at Paris, Prague, St. Petersburg, and Moscow, the maximum and minimum temperature is occasionally equal to the above, but they are of rare occurrence. Indeed, instances are on record in which the foregoing extremes have been exceeded by  $45^{\circ}$  Fahrenheit. During the celebrated expedition of Capt. Parry, in 1819-20, the maximum daily temperature at Melville Island, latitude  $70^{\circ} 47'$  North, the 17th of July, was  $50^{\circ}$  above zero, while the minimum on the 15th of February, was  $50^{\circ}$  below zero; the maximum and minimum points being separated 110 degrees. In 1840, while the Russians were on an expedition to Khiva, the mercury fell  $54^{\circ}$  below zero, and in June, it rose to  $114^{\circ}$ , making a variation of 160 degrees. At Franconia, New Hampshire, July 13, 1849, the mercury rose to  $102^{\circ}$ , which was  $140^{\circ}$  higher than on the 6th of February of the succeeding year.

A certain degree of cold—zero or thereabout—appears essential to the development of a predisposition to cholera infantum. This is deducible from the fact, that however intense the heat, or excessive the humidity and malaria, these agents never produce the disease, unless they form part of a climate, having for one of its constituent elements, a low thermometrical range. In

other words, cholera infantum does not prevail in those latitudes which furnish an uniform climate, with mild Winters merging into genial Spring, nor where the Summers are cool, partaking of the nature and character of the preceding Winter; but the disease produces its greatest havoc, when the greatest extremes uniformly obtain between the mean range of the warmest and coldest meteorological seasons.

Let us examine, briefly, how Dr. Stewart's theory corresponds with the above facts. He claims that cholera infantum is produced by the joint agencies of atmospheric heat, high dew-point, and malaria of large cities, operating upon the economy of infancy in a state of rapid transition to maturity. He likens the action of these causes in the production of this disease, to the operation of the same agencies in tropical climates in developing diseases of the liver and intestines in adult subjects. These latter he assumes as his standard of pathology, by which he compares and illustrates the subject under consideration. A few facts will be sufficient to demonstrate the utter fallacy of this doctrine.

*First*, cholera infantum is endemic to the United States, and exhibits its greatest virulence in the eastern and middle portions of this region.

*Second*, this disease never prevails in those latitudes and localities where the above agencies—heat, moisture, and malaria—exist most persistently and in their highest forms of concentration.

*Third*, idiopathic affections of the liver depending upon the action of these agencies, are rare in those districts which exhibit the greatest amount of cholera infantum.

*Fourth*, as we proceed South from the isothermal line of  $60^{\circ}$ , cholera infantum gradually decreases, while affections of the liver, and the agencies which produce them, increase; the former in frequency, and the latter in intensity. These facts are utterly at variance with the theory of the author.

A practical illustration will render the inconsistency of Dr. Stewart's theory still more apparent. In New Orleans, the mean thermometrical condition of the air during the Summer months, is generally  $80^{\circ}$  Fahr., with an average dew-point of

about the same number of degrees. These are the circumstances, also, which produce malaria in large cities, in its most virulent forms, and yet cholera infantum is a disease almost wholly unknown among the children of that sunny region, while affections of the liver are of daily occurrence. And so on, just as we approach the isothermal equator, will all the agencies recognized by our author as contributing to the production of the disease under consideration, increase in intensity; and still, cholera infantum forms no part of the pathology of the tropics. We must, therefore, seek for the cause of cholera infantum in other agencies than those enumerated by the author of this essay.

The district of country in which cholera infantum prevails most extensively, presents a climate peculiar to it alone. The great variations, ranges, and extremes of temperature, are rarely equalled anywhere; and were I disposed to offer a theory to account for the development of the disease, with these facts before me, I certainly would be inclined to refer it to the great ranges and extremes of temperature acting upon the sensitive organism of infancy during the period of active development; and not to agencies which are general in their action, and exist in their most concentrated forms, where cholera infantum never prevails.

The marked influence which cold exercises in developing a predisposition to disease of the alimentary system, has long been known to the profession; and finds an apt illustration in individuals visiting the tropics during the Summer season, from northern latitudes. Few, if any, are able to resist successfully the pernicious influences which are thus brought to bear upon them during the first and second years of their residence in these regions of high atmospheric heat. After their systems once become accustomed to the excitement which results from the above agent, or becomes acclimated, the tendency of the liver and intestines to take on morbid action, in a great measure, is lost. In some instances, however, it requires several successive Summers to produce this result, and until it does take place, visitors are constantly exposed to the endemics of these regions.

The above circumstances obtain and apply, though in a less

marked degree perhaps, to children born in the temperate zone. The extremes of temperature furnished by this region are, to them, what a sudden transition from the temperate to the hot zone would be to an adult; and the period of acclimation experienced by the former, is not unlike that of the latter. Children often have cholera infantum during their second, third, and fourth Summer; and they rarely suffer from the disease until they have passed one Winter. I, of course, do not assume that these extremes are the sole, or even controlling agencies in the production of cholera infantum, but am of the opinion that they exercise a marked influence, and supply a lacking element in Dr. Stewart's theory of the etiology of the disease, which refers it to heat alone. But I yield to the admonition, that too much space is being occupied in considering the etiology of cholera infantum, and will therefore pass over the next department of the essay, Semeiology, and give the treatment a passing notice. There we find nothing that is new. Indeed, I cannot resist the conviction that it is incomplete, inconsistent with the pathology as laid down by the author, in one or more features; and in others, erroneous from a misapprehension of the nature of the pathology, constituting the third stage of the disease.

"In the treatment, it must be kept in mind that the use of therapeutic means is of little avail while the active agents in the production of the disease are in continued action upon the system." This state of affairs uniformly obtains in all miasmatic diseases—and indeed all affections depending upon atmospheric causes, and yet, we have learned in this prize essay for the first time, that "therapeutic means are of little avail, as long as the active agents in the production of the disease are in continued action upon the system." In this district of country, the persistent action of malaria upon those who are suffering from miasmatic diseases, certainly proves one of the great barriers to permanent convalescence; yet, few physicians would advise all their patients thus affected, to seek mountain air for the cure of these affections. The causes producing cholera infantum are not more constant in their action upon infants, than is miasm upon adults.

"Cholera infantum in its progress, appears in three different



conditions or stages. The first is marked by an increased activity of the bowels, the second by inflammation and ulceration, and the third by complications." When diarrhoea occurs in teething children, at a period when cholera infantum prevails, our author is accustomed to "regard its probable termination in that disease. For this condition he first prescribes soda or potash, with sugar or gum arabic. If this fails, he orders chalk mixture, and when the diarrhoea is in no degree controlled by this remedy, vegetable astringents are added. They (astringents) may be freely employed if there exists no febrile action, or heat of the abdominal surface." Cutting the gums and frictions with mercurial ointment, rendered stimulant by powdered gum camphor, embraces the early treatment.

This system of medication is certainly not consistent with the author's views of the pathology of the disease. And it is an incontrovertible fact, that the above, or some similar method of medication addressing itself exclusively to the intestinal tube, will, in the early stage of the disease, cure many, if not a decided majority of the cases of cholera infantum. When there is a simple relaxed state of the bowels, or an increased number of liquid stools, without obvious evidence of hepatic derangement, sugar of lead and morphia, with stimulating embrocations to the abdominal region, will often control the case independent of anything additional, aside from proper food and good nursing.

It will be borne in mind that the author's idea of the pathology of the disease consists in congestion of the liver, and remora of the portal circle, tending to produce inflammation and ulceration of the bowels. If, with him, we take it for granted that the diarrhoea of teething children, occurring during the Summer months, be the first stage of cholera infantum, it does appear to me a needless waste of time, and a hazardous procedure, to tamper for several days with antacids and absorbents, in the treatment of a disease, which destroys from ten to twelve per cent. of the whole number of children under five years of age in some cities. The next agent used is little, if at all, better. Indeed, I have but limited faith in the salutary action of vegetable astringents in the early stage of this disease, even when joined to more appropriate remedies. This condition—



acidity of the primæ viæ—for which the antacids were prescribed, will disappear as soon as the cause upon which it depends is removed. Then too, by a union of the acid and alkali in the intestinal tube, a cathartic salt is occasionally produced, and the very condition which the remedy was designed to control, will be aggravated. The occasional accumulation of cretaceous substances, in the bowels also, after their repeated administration, furnishes a fair presumption that articles of this kind might not always be the most salutary in their action, upon the mucous surface of the intestines in an irritable and inflamed condition.

Hydrargyrum cum creta, Dover's powder and magnesia is his next prescription. If vomiting be persistent, the Dover's powder should be withdrawn.

"When the disease is fully formed, mercurials become indispensable to its management, and the best form is calomel. From the twelfth to the eighth of a grain should be administered every two, four, or six hours, intimately combined with some inert substance, as fine sugar." This combination is a valuable one, but instead of making it into a syrup, as directed by Dr. Stewart, I prefer to drop the powder upon the tongue of the little patient, and allow a few drops of water immediately after it. When there is any great repugnance on the part of the subject to the use of medicine, this remedy may thus be administered while the child is sleeping, without it being conscious of the fact.

"The calomel should be continued as the principal means of relief, until freshly secreted bile appears in the evacuations.

\* \* \* \* \* When a free circulation of blood from the intestines is secured, and the congestion of the remote branches of the portal vein relieved, the disease then comes under control."

Whenever it has been deemed advisable to resort to the use of astringents, we have been in the habit of suspending the mercurials for a short time. Tannin, either pure, or as it occurs in kino or catechu, will often temporarily arrest the discharge. One of the most efficacious astringents is the acetate of lead, combined with Dover's powder, in the proportion of a third of a grain of the former to a twelfth of a grain of the latter."

"At the commencement of the disease it—opium—should never be used," and yet the author prescribes Dover's powder in the first stage of cholera infantum, combined with Hyd. cum. creta.

"Such are the general measures, the best adapted for the cure of cholera infantum, and are those which should be adopted in the onset of the disease, and with occasional modifications, used throughout the course."

The above embraces the general treatment of the first stage of cholera infantum, as laid down in the Essay under consideration; and in addition to it, in the second stage, when inflammation and fever appear early, leeches to the anus or dry cups to the abdomen are counseled. Calomel and Dover's powder form his favorite prescription. In this state also, nitrate of silver and balsamic preparations have been found beneficial.

"The third stage is the period of complication. When the cerebral symptoms, such as congestion and stupor appear, very little, if any, treatment is of any use. We have often resorted to the various modes of combating congestion of this organ at this period, and have as often failed in obtaining any relief. We regard, therefore, the symptoms making this stage as preceding a fatal termination."

The author places great stress upon the use of gelatin in solution, as an article of nourishment, believing it to be a valuable substitute for all species of farinaceous diet. I suppose that he is aware of the fact, that this substance will not sustain life for any considerable length of time. It has been demonstrated that animals fed upon it alone, will die almost as soon as though nothing at all was allowed. In exhausting diseases, such as cholera infantum, something more decidedly nutritious than gelatin is certainly commendable, indeed indispensable to the security of the little patient.

I have thus presented somewhat in detail, the leading features of the treatment of cholera infantum, as laid down in this prize Essay. It will strike those who are familiar with the affection, as being in some respects defective, and in others inappropriate and hazardous.

Without stopping to enquire by what precise steps the liver at first becomes involved in the morbid action of cholera infantum

tum, for all therapeutical purposes, it is sufficient for us to know, that this organ, often at a very early period of the disease evinces signs of derangement in frequent acid, light colored stools, or stools abounding in insoluble curds of milk. One or the other of these conditions may be present from the very beginning, and constitute the first signs of cholera infantum; depending upon a want of healthy secreted bile in the primæ viæ.

Any system of treatment which addresses itself to the restraining of these free motions, or the correction of the symptoms depending upon the acidity—such as antacids and astringents—only tends to remove a single symptom, without affecting in any manner the original elements of disease, upon which their condition depends. In all cases, therefore, when this form of “diarrhœa appearing in teething children at a season when cholera infantum is prevailing, it is proper to regard its probable termination in that disease.” Then if our views of the pathology of this condition is correct, the secretion of the liver, and not the intestines, should receive our earliest care. A few portions of calomel and opium or morphine—the latter being carefully adapted to the age and condition of the patient,—will unload the hepatic branches of the portal circle, by the production of a gentle secretion of bilious matter, and a serious, perhaps fatal, attack of cholera infantum arrested.

Frequent use gives different practitioners confidence and familiarity in the effects of different preparations of mercury, and it is not unfrequent on these grounds, that some prescribe a particular combination—calomel, blue chalk or mass, to the entire exclusion of the others. When it becomes necessary to administer mercurials, it is not a matter of much moment in my judgment, what article is made use of in cholera infantum, so that it is pushed until its gentle action upon the liver is apparent. Anything short of this will be insufficient.

When the diarrhœa is profuse and exhausting, and the stools partake of the nature just described, some astringent must be added to the above prescription, to prevent exhaustion, until the mercurial has time to act upon the liver. There are several reasons why sugar of lead is better in this condition than any thing else. When in solution, its effects are peculiarly soothing to inflamed and irritable surfaces, internally or externally.

It contributes often in a remarkable manner, towards allaying nausea and vomiting ; and in passing through the intestines it enters directly into chemical combination with compounds of sulphurated hydrogen, thus removing an additional source of irritation. These joint circumstances peculiarly adapt it to the early stages of cholera infantum.

The great error of the Essay, however, is the principles advanced in connection with the third stage of the disease. I have quoted all the author has to say upon the subject, for the benefit of those who may trouble themselves with perusing this imperfect review. As long ago as 1841, Marshall Hall, and about the same time Dr. Gouch, called the attention of the profession to the true nature of cerebral symptoms, following exhausting diseases, and especially diarrhœa. They demonstrated most conclusively, the spurious nature of these symptoms of congestion. The former denominated the condition, *hydrocephaloid disease*, and the latter, *symptoms in children erroneously attributed to congestion of the brain*. During the progress of cholera infantum, if the diarrhœa and vomiting are severe, symptoms will supervene at an early hour, strongly simulating real congestion of the brain ; and there is no condition which requires greater precision in diagnosis than this. The patient grows extremely sensitive ; suddenly shutting the door of the apartment, a heavy step, or even handling its clothing, arouses the patient from its half slumbering state, agitated almost to the point of actual convulsion. The countenance becomes more anxious, the brow knits, pupils contract, eyes turn up in their sockets, the face flushes, and the pulse rapidly increases in frequency, but loses in force and volume. The head rolls from side to side, the fingers clutch the hair or an ear, or occasionally are thrust deep into the mouth and fauces.

These symptoms if not promptly met by the appropriate treatment, rapidly grow worse and the patient dies comatose or in convulsions. The history of the case, the cerebral symptoms supervening upon exhausting diarrhœa and vomiting, extreme irritability of the patient, rapid, compressible pulse, anterior fontanel sunk below the level of the cranial bones, are the main features upon which dependence must be placed in forming a diagnosis in this condition. "Under no circum-

stance," says West, "are mistakes more easily committed, and never are their results more mischievous, than when spurious is treated for real congestion of the brain."

The proper treatment for hydrocephaloid disease, consists in the use of tepid baths, fomentations to the bowels, with the internal administration of stimulants, anodynes, and nutriments. Of these, laudanum, wine-whey, brandy-toddy, beef and chicken tea, are the best articles. The above condition must not deter the practitioner from making use of remedies to restrain the action of the bowels when diarrhœa persists, and maintain the secretion from the liver. Nor, must he hesitate to give anodynes, until quiet is secured and excitability overcome. Dr. Stewart says, that "we have often resorted to the various modes of combating congestion of this organ at this period, and have as often failed in obtaining any relief." This result is about all that could be expected from the "usual method of combating congestion of the brain," when applied to a condition of this organ, depending upon a want of the due amount of healthy blood being sent to it, rather than an excessive repletion of the organ.

How the author should fail to recognize an anæmic condition of the brain as the parent of those symptoms simulating congestion, is to me unaccountable; and with our present knowledge of the pathology of this condition, it certainly is scarcely excusable. Coming from an author of a "Practical Treatise upon Diseases of Children," and bearing the endorsement of the New York Academy of Medicine, it certainly is calculated to mislead the profession, and enure to the detriment of scientific progress. I look upon the separation of these symptoms from the morbid condition of the brain known as true congestion, as being one of the genuine triumphs of this progressive age, and to be placed back at least fifteen years—as this position contemplates—upon this subject, is not compatible with the genius of our science. I have certainly cured more than one patient presenting the above symptoms, supervening upon cholera infantum, by morphia, wine-whey, beef and chicken tea, alterants, astringents, and stimulating baths.

In addition to the above defects, the Essay is imperfect in failing to recognize and treat of the most usual complications

and sequellæ of cholera infantum ; and although these derangements are not confined exclusively to the disease under consideration, yet they are so influenced and modified by the morbid agencies giving origin to them, that they require special medication. Among the more prominent and important of these, are, chronic hepatitis, tabes and purulent accumulations in the subcutaneous cellular tissue, as a result of imperfect assimilation, or depraved nutrition. In delicate children, and those especially of a scrofulous diathesis. the joint action of one or more of these complications, eventually proves fatal, long after the legitimate lesions of cholera infantum have disappeared. They, therefore, are entitled to distinct consideration in a monograph upon the disease, without which it is incomplete.

Finally, those who desire to keep themselves thoroughly advised upon matters pertaining to cholera infantum, will do well to read this Essay, if an opportunity chances to offer. It is a fair contribution to the subject of which it treats, but I do not think that the author is entitled to the highest praise for elegance of style or perspicuity of expression.

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*Case of Strangulated Hernia : presenting some Peculiarities of interest.* By EDWARD H. PARKER, M.D. Late Professor of Anatomy in the New York Medical College, &c., &c.

On Sunday, the 7th day of November, 1852, during my residence at Concord, N. H., I received a message from my friend, Dr. E. K. Webster, of Boscawon, desiring me to join him immediately, and with the instruments necessary for operating for strangulated hernia. It was about eleven miles to the house of the patient, and although I made all possible haste it was nearly three o'clock in the afternoon before I saw him. Beside Dr. Webster, Dr. Brown of the same town was present, and Mr. now Dr. Call, at present assistant physician in the New Hampshire Asylum for the Insane. The few hours of daylight which remained admitted of no delay, and I at once proceeded to examine the patient. Dr. Webster's diagnosis was found to be correct, and he gave me these particulars :

Mr. Jacob Gerrish is a man of seventy-three years of age, a

farmer in comfortable circumstances, usually enjoying perfect health. For a few years he has been troubled with an indirect inguinal hernia upon the left side, which he has kept back by the aid of a truss. This instrument, however, has not been sufficient to keep it entirely in place, and frequently when he is ploughing or doing other hard work the bowel escapes in spite of it. Yesterday (Saturday) he was at work and felt the bowel come down and replaced it as usual, continuing at his work. During the night, however, he felt some uneasiness about the inguinal region, and although he noticed the tumor in his groin, thought little of it. This morning the tumor still remained and was painful, resisting his own attempts at reduction, and knowing the dangers of strangulated hernia, he at once sent for Dr. Webster. That gentleman tried to reduce the hernia several times by taxis, and although his efforts were made with the greatest skill and while the patient was under the influence of chloroform, they made no impression upon the tumor. He therefore sent at once for me to operate.

I found the tumor to be as above stated, an indirect inguinal hernia upon the left side, protruding about half an inch from the external abdominal ring. Placing the patient in the proper position for taxis, I made some efforts to reduce the hernia, but finding that they were ineffectual, and knowing Dr. Webster's skill to be such, that after his failure it was not probable that any one else would be successful, I abandoned the attempt. There was already considerable heat and tenderness in the tumor. Only two hours of daylight remained, and I therefore decided to operate at once. Dr. Brown, however, stated that he had seen hernia successfully reduced without operation, when taxis had failed, by administering tobacco enema, which seemed by its excessive relaxation of the whole system to relieve the stricture and to allow the intestine to return to the cavity of the abdomen. I had no confidence in this method, but deemed it proper to state to the patient not only my opinion but that of Dr. Brown. It happened that Mr. Gerrish's wife had died after an operation, by another surgeon, for the relief of strangulated umbilical hernia, while a near neighbor had also died, after an operation by still a third surgeon, for the relief of the strangulation of an inguinal hernia. Under these cir-



cumstances he naturally enough wished to try every other means before submitting to an operation. I frankly stated to him that I had no confidence in the effect of the enema; that it would be very prostrating, and that if it failed it might be that before he had recovered from its effects, the strangulation would cause gangrene of some portion of the intestine. Still the proposer of the injection urged it so strenuously, that the patient thought he would like to have it tried, and it seemed on the whole, best to yield to his wishes, although I was convinced that it would compel me to operate during the night.

The injection was accordingly prepared and administered, producing extreme prostration, although the patient had long been in the habit of chewing tobacco freely. When the prostration was complete, careful but sufficient efforts were again made to reduce the hernia by taxis, but though carried to the greatest extent which the patient's condition allowed, and quite as far as I thought safe, the tumor still remained unreduced. The proper measures were taken to restore the patient, and every arrangement was made for operating.

It was nine o'clock in the evening, before the effects of the tobacco had sufficiently passed off to justify me in proceeding. Any one who has been compelled to perform a grave operation with no other light than that given by tallow candles, can appreciate my difficulties. Still the patient's life depended upon an immediate operation, and I proceeded without hesitation. Dr. Webster kindly consented to administer the chloroform, and knowing him to be skilful and attentive, I gave myself no farther anxiety about the use of the anæsthetic. The other gentleman assisted me in the operation whenever it was necessary. The first incision was made by pinching up a fold of the skin and piercing it with a bistoury at its base and then cutting outward. The danger of penetrating the tumor itself, which has been described by some writers, I am sure does not exist, and how any one can suppose it to, passes my comprehension. The *skin* is to be raised in a fold, and it is perfectly easy to feel through the thin skin of this region, whether or not anything else intervenes. The surface of the tumor itself is, moreover, made smooth and tense by the crowding of its cavity with the



very contents which cause it to become strangulated. After dividing the skin, the layers beneath were raised in the usual manner upon a director and divided. When the sac was reached, I found that the intestine though dark, had not lost its vitality, and therefore after dividing the cutting borders which pressed upon it both at the external and internal ring, the strangulation being at the latter, I attempted to return the intestine to the cavity of the abdomen, but found it to be impracticable. Repeating my examination, I satisfied myself that the cause of strangulation was entirely removed, the improving color of the intestine giving evidence of the same thing. I then took hold of the intestine, and on attempting to examine the surface, to be sure that there was no spot of sphacelus, I found it adherent to the outer side of the inguinal canal by firm, false membranes, evidently of no recent origin. Attempting, with as much force as I deemed justifiable, to tear off the intestine from the sac, I found it to be impossible, the intestine, the sac, and the walls of the canal being closely consolidated. There remained only to dissect the intestine from the sac, and this, in itself a delicate operation, was rendered doubly difficult from the dimness of the light with which I was compelled to work. Having satisfied myself at length, that the bowel was set free, and having previously shown the unusual complication to the medical gentlemen who were present, I requested them also to examine and satisfy themselves of my success. Dr. Brown, who was nearest to me, proceeded to do so, but raising the loop of intestine and seeing that it was entirely clear, he was about to lay it down again when it slipped back into the abdomen. The wound was at once closed by sutures and adhesive plaster, and a wet compress placed over it, the patient carefully replaced in bed, and made comfortable. The chloroform had been continued throughout the operation, but was administered so skilfully, that no unpleasant effects resulted from it, and this, although the patient was under its influence for nearly two hours.

The simple operation for the relief of the strangulation was speedily accomplished, but after the complication was discovered, I proceeded very slowly, preferring as I always do, that *slow haste* which secures the safety of the patient, rather than

that brilliant rapidity which is supposed to be so creditable to the surgeon. The adherent surface of the intestine was about an inch in length and at the widest part half an inch in breadth, extending nearly up to the internal ring. Throughout this extent the intestine, the sac, and the tissues, constituting the outer wall of the canal, were consolidated so that it was difficult to distinguish between them, and while the greatest danger to be apprehended was of cutting into the intestine, I wished, on the other hand, to leave its surface as free as possible from adventitious membrane. This I successfully accomplished by sometimes dissecting between the two when drawn apart by my assistants, and sometimes by placing my finger beneath the edge of the union and carefully cutting down upon it.

Finding that the patient was very comfortable, with a good pulse, and in excellent spirits, I left him about midnight under Dr. Webster's care and went home. The next day (Monday) I received a note, assuring me of the promising condition of our patient. On Tuesday, I visited him again, and found him in a very satisfactory condition, and from this time his recovery was constant and rapid, the greater part of the wound uniting by immediate union.

The interesting feature of this case is the adhesion, of which I have spoken,—an unusual complication, and one tending to embarrass the operator as well as to delay the return of the intestine to the abdominal cavity. The situation of the adhesion as respects the inguinal canal, I have pointed out, and stated that the intestine, the sac, and the walls of the canal were firmly consolidated. How this could have occurred, was a great puzzle to me, which I could not satisfactorily answer, until my second visit to the patient. I then questioned him as to his mode of wearing his truss, and found that he had not always been particular to put the bowel all back before he allowed the pad of the truss to press on the ring. He did not think that, for some months previous to the strangulation, the tumor had been entirely reduced. The truss had not caused him very great pain, though sometimes it was rather uncomfortable. The pressure of the truss pad directly upon the tumor, had probably at some time, (and from the degree of or-

ganization it must have been at least twelve months previous to the operation,) caused sufficient inflammation and effusion of lymph upon the serous surfaces to fasten them together, and the repetition of the same influence would tend still further to increase the adhesion. It is probable that a great part of the pressure of the truss came below the external abdominal ring, so that its full power was not exerted directly and constantly upon the intestine. I have had very frequent occasion to apply trusses to the inguinal region, and have found that patients almost always have the idea that the opening through which the hernia escapes must be below the bone, and they are very careful to have the pad low down instead of over the internal ring. It is also noticeable that from the mode of the adhesion, it being upon the outer side of the intestine and nowhere involving more than half of its circumference, the calibre of that portion of the canal would not be at all diminished and its functions not interfered with. It is not very uncommon to find the intestine fastened by a greater or less patch of adhesion to the abdominal wall, so that in this view of the case, there is nothing very remarkable. The internal ring was of sufficient size to allow the intestine to return within the abdomen to such an extent that its contents could readily pass along the canal. Hence the strangulation did not occur at once, as would have necessarily been the case if the whole calibre of the intestine had been detained in the sac.

Had the patient been a young man prone to inflammations, there can be no doubt that the peritonitis would have extended and perhaps brought life in danger. So too, had he been young, at the time of the operation, his peril from the same cause would have been far greater. His rapid and perfect recovery from the operation was doubtless due to his healthy condition, the happy result of an active, temperate, and contented life.

279 FOURTH AVENUE.

*Upon the Formation and Sources of Atmospheric Ozone.* By M. H. SCOUTETTEN, Physician-in-chief to the Military Hospital of Metz.

[Atmospheric Ozone, since its discovery, has been chiefly investigated in its chemical relations. Recently, however, some observers have extended their observations, supposing that they had discovered in it, the mystery which envelops the rise and progress of epidemics, and many experiments have been made to ascertain this hidden influence, in order to illustrate the law of epidemics. In our own country but few observations upon this body have as yet been instituted. At the recent sittings of the Association for the Advancement of Science, Prof. W. B. Rogers read a paper entitled, "Remarks on Ozone Observations," which elicited an exchange of opinion. Nothing very conclusive in relation to this body was however furnished by either the paper, or the discussion following it. We take the following brief abstract of the paper from the report of the *Tribune*, of August 26th:—"Many years ago, Schönbein discovered an agent of great energy in the atmosphere, which from its disagreeable smell he called Ozone. It has been considered as a peroxide of hydrogen, and also as an allotropic form of oxygen. From experiments made at Boston, Professor Rogers found that westerly winds contained most Ozone, but in subsequent observations made on an island hill he ascertained that winds from all directions gave similar amounts of Ozone, while calms from bringing less air on the ozonoscopic paper, gave small amounts. In reply to a question of Dr. Glück's, Professor Rogers stated that he had not been able to discover any effect from light and heat. He thought that in cities Ozone was neutralized by organic matters in the air. Prof. Horsford thought there was at least two atmospheric agents, both called Ozone. He was of the opinion that there may be many agents in the atmosphere that may effect Ozonic observations, or even give indications of Ozone. A member from Portsmouth, Va., as the result of his observations, stated, that last Summer Ozone was deficient, and this Summer had been abundant with abundant thunder, and that the character of disease is entirely different there this year from the febrile

type of last year." Recent French journals bring us the reports of several papers read before the Academy of Sciences, on the Influence of Atmospheric Ozone upon the Sanitary Condition of a country. Mr. Wollf of Zurich, Switzerland, gave as the result of his observations during an epidemic dysentery at Berne, in 1855, that the severity of the epidemic increased and diminished with the quantity of Ozone; while M. Berigny, who has made several reports upon this subject, states that where Ozone is abundant there is less disease, and the reverse, that there is more disease where Ozone is proportionally less. Another important fact resulting from M. Berigny's observations is, that Ozone increases in quantity with altitude. He found more Ozone in the third story of a building subjected to his examination than in the first, and the ratio of sickness corresponding to the statement already made; there was more sickness in the first story than in the third.

We have been informed by a physician of this city, whose engagements carry him into tenant houses, where many families are collected under the same roof, that he finds more cases of disease in the third story than in the first, or even in the basements.

The value of the observations upon Ozone in a sanitary point of view are still doubtful. In the hope, however, that the investigation of this body may lead to some beneficial result, we have been induced to offer to our readers the translation of an interesting paper on the "Sources of Atmospheric Ozone," which illustrates some points as to the influence of light and heat upon its production, which was the subject of some discussion at the last meeting of the Association.

The test-paper generally used by experimenters upon Ozone is that introduced by Schönbein. As iodide of potassium has been found to be acted upon by Ozone, paper soaked in a solution of starch, containing 0.002 of its weight of this iodide was prepared by him, and called ozonometers or ozonometric reagents. This paper when altered by Ozone, is found tinged with various shades of brown, the intensity of which is measured by a scale of ten gradations. The brown tinge of the ozonometer is produced by the decomposition of the iodide of potassium—the oxygen of Ozone combining with the potas-

sium, and setting free the iodine which now forms the iodide of starch. In its dry state this new combination is of a brown color; but when moistened it assumes a blue tint, the intensity of which indicates the quantity of Ozone. J. H. D.]

Up to the present time, Ozone has been studied particularly in a chemical point of view, and many works of great value have resulted from it. Considered successively as a simple body, as a compound body composed of oxygen and hydrogen, as a nitrous acid, &c.; it is only since the splendid observations of MM. Marignac and de la Rive, Fremy and Ed. Becquerel, that the true character of this agent has been determined, and that Ozone has been proved to be oxygen electrified. Natural philosophers, meteorologists, physicians, have also been engaged with this body, but puzzled by its apparent anomalies, they have considered it as a capricious agent, the presence or absence of which did not merit more than a secondary notice. Ennui and discouragement promptly succeeded to a moment of enthusiasm, and perceiving neither object nor result, investigators generally abandoned their experiment.

Science was at this point, when suddenly the sources of Ozone were discovered. Drawn on by my observations, I pursued this body in all its manifestations; I saw it spring into existence, grow, and assume an importance, the boundaries of which cannot be defined.

Since then, Ozone appears to us no longer as a chemical agent only. It is the instrument which Providence makes use of for producing the grand phenomena of nature, by which can be explained the formation of aqueous meteors, the periodic and diverse oscillations of the barometer, the means of restitution to the atmosphere of oxygen destroyed by the respiration of animals, by natural oxydations, the combustion of fuel, and of great metallurgic manufactures.

The bond which unites all these acts is rendered evident by the discovery of the sources of Ozone, showing that this body is formed—

1. By the electrization of oxygen which escapes from water;
2. By the electrization of oxygen secreted by plants;
3. By the electrization of oxygen disengaged during chemical action;

4. By electrical phenomena reacting upon the oxygen of the atmosphere.

The following are a series of experiments relating to these four orders of facts:—

1. ELECTRIZATION OF OXYGEN WHICH ESCAPES FROM WATER.

EXP. 1.—April 26, 1856, a pail of river water was poured into a glazed earthen dish, elevated from the ground by three glass bottles, forming a tripod, so as to avoid the influence of the electricity of surrounding bodies.

A bell-glass, 40 centimetres high, holding six litres, was placed over this water. It had within and at its summit a small band of ozonoscopic paper, suspended by a thread which was attached by wax.

The temperature was  $+10^{\circ}$  centigrade; the sun shone brilliantly, but towards 10 A. M. clouds hid it until near 3 P. M. The experiment commenced at eight o'clock, and continued until the next day at the same hour. The paper was deeply colored, and marked No. 7 upon the ozonometric scale.

This remarkable result attracted our attention. The experiment was immediately repeated with spring water, river water, and rain water. Two glazed pans were placed directly upon the roof of a high house, a third was elevated on glass bottles. These three experiments commenced at eight A. M., passed through the same phases, and gave the same results.

The formation of ozone under the conditions indicated could no longer be doubted, but many inquiries remained to be solved.

EXP. 2.—At what hour is Ozone formed? A new series of experiments, commencing at six and ending at six, demonstrated to us that under a temperature varying not more than  $3^{\circ}$  to  $5^{\circ}$  centigrade, no appreciable phenomena were manifested; but that from six to eight o'clock, and as the temperature became higher, water was evaporated, and was condensed in little drops upon the interior walls of the vase. The paper began to be colored about nine o'clock, first of a straw-color, then of a yellow chamois color; at eleven, these phenomena were more intense; at noon they attained their maximum, but the paper continued to be colored until about three; then the vapor of wa-



ter diminished. After that, little drops which covered the interior of the vase and ran down its walls were alone observed.

The order of these phenomena is constant, but they are produced with more or less rapidity and intensity, according to the elevation of the temperature and the brightness of the sunlight. We have seen the evaporation of water, and shortly after the coloration of the paper commence, about ten o'clock in the morning, and at other times as early as seven.

Spring water, river water, and rain water, therefore, contained in vessels placed upon the ground or raised above it by glass feet, constantly produce Ozone.

We immediately inquired then if the oxygen attending the formation of Ozone, came from the decomposition of a part of the water which passed off in vapor, or if it was furnished by the air contained in this liquid? To reply to this enquiry we made the following experiment:—

EXP. 3.—Six litres of distilled water were poured into a glazed earthen pan, and a bell-glass disposed as before mentioned, covered the liquid. At the end of the operation, the ozonoscopic paper presented a slight coloration, attaining No. 2 of the scale.

It was not long before we discovered some objections to the correctness of this experiment. Could not this distilled water, prepared many days before, have absorbed some air, or that portion of water which was not covered by the bell-glass, but which communicated with that within it, could it not have been the means by which some air taken from the atmosphere might have passed in? This inquiry was solved by the following experiment:—

EXP. 4.—Six litres of distilled water were boiled for an hour, in a glass vessel; then, all air being expelled, the liquid was poured slowly into the earthen pan, the bell-glass placed over it, and in order to prevent any contact with the exterior air, we poured upon the water surrounding the bell-glass, a thick layer of oil.

The experiment commenced at eight A. M., and continued until evening at the same hour. The sun shone brightly, the temperature was  $+16^{\circ}$  at noon. The paper showed no alteration—remaining perfectly white.



It was therefore proved that the Ozone was not formed by the decomposition of water, but by the disengagement of oxygen dissolved in this liquid, and that the gas becomes electrified by the chemical reaction which takes place when water evaporates, and abandons the salts it holds in solution. If the water be pure, it furnishes neither oxygen nor free electricity.

This experiment also shows that the solar rays do not directly increase the oxydating properties of oxygen, that for that purpose a concurrent chemical reaction is necessary, without which they are powerless.

It became interesting to discover if ordinary water, from a spring or river, covered with a thick layer of oil, and thereby excluded from the air, would produce Ozone.

EXP. 5.—The experiment was performed April 28th, commencing at seven A. M., and continuing until seven P. M. For two hours there was no apparent phenomenon, but towards ten o'clock, the paper became rapidly colored. At noon, suddenly, bubbles of air were observed to raise up the oily liquid, then break, throwing the oil up two or three centimetres. This took place on the outside of the bell-glass; it was not observed within, which we account for by the pressure produced by the air within dilated by heat.

The ozonoscopic paper had acquired a deep tint. It marked No. 9 on the scale, an elevation of coloration which we believe due to a chemical action resulting from a slow combustion taking place, produced by the electrified oxygen passing through oil.

EXP. 6.—Salt water was also experimented upon. It did not give any stronger reactions than spring water; it was even a little feebler than that produced by rain water, which, as is well known, contains a larger proportion of atmospheric air than any other water.

The results of these experiments appear to indicate so plainly the influence of light and heat upon the formation of Ozone, that we cannot omit to ascertain the correctness of it by direct observations.

EXP. 7.—Several glazed earthen pans containing spring and river water, were covered with bell-glasses arranged as we have already indicated. The experiment commenced at the

moment that the sun set, and was continued until seven the next morning. The ozonoscopic paper was found to be perfectly white. The same experiment, repeated several times, in different places and at different hours, gave invariably the same results.

Are light and heat indispensable conditions to the development of electricity, or were the facts observed, the result of the suspension of the chemical actions during the night? This inquiry deserved a solution by particular experimentation.

Exp. 8.—Water, recently taken from the river was placed in an earthen pan, and covered as before, with a bell-glass containing some ozonoscopic paper. Over this bell-glass we threw a thick towel, which prevented the solar rays from acting directly. The experiment commenced in the morning and was continued until quite into the evening. The paper remained perfectly white. The same experiment, repeated several times, always gave the same results, which showed that light exercises an important influence upon the production of Ozone.

It still remained to ascertain whether heat alone was sufficient to develop Ozone by favoring the evaporation of water and the chemical actions. The earthen dish prepared as before, was placed upon a furnace, and the temperature of the water raised to near the boiling point.

After waiting several hours, the paper was ascertained to be perfectly white. But this experiment is faulty, for chemistry teaches us that heat at  $90^{\circ}$  (Laissaigne, *Journal de Chimie Médicale*, t. ix., p. 510) discolors iodide of starch, and that the vapor of water dissolves iodide of potassium.

Besides, the experiments of M. Peltier demonstrate that the vapor of water does not produce free electricity below  $110^{\circ}$ .

We also tried to find out whether dry air, raised to a high temperature, gave any electricity capable of being detected by the test-paper. To attain this result, we placed a piece of sheet iron over a large spirit-lamp, and upon this iron a bottle with a large opening, and notwithstanding the duration of the experiment, the paper remained perfectly white.

The results given by these experiments cast a new light upon the production of atmospheric electricity, and upon the phenomena which accompany it; they reveal new laws to us which

were not even suspected; and by them we are able to understand obscure facts verified by observation, but which science could not explain.

## 2. ELECTRIZATION OF OXYGEN SECRETED BY PLANTS.

The experiments of Priestley, of Ingen-Housz, repeated by a large number of observers, had proved that vegetables exhaled during the day, a gas which they declare to be oxygen. This fact appeared incontestible, and science had admitted it definitively.

Wishing myself to verify this phenomenon and to find out the conditions necessary to its manifestation, I made divers experiments, which caused me to suspect the electrical state of oxygen secreted by plants; I wished to convince myself of it.

Exp. 9.—April 27, 1856, a bell-glass containing an ozonoscopic paper, was placed over a bunch of clover. It was eight o'clock in the morning, and at ten the paper already showed a change which gave to it a yellow chamois color. At noon the coloration was still more observable, still increasing a little, and finally ceasing about 3 P. M. The paper taken from the glass, was dipped in a little water, and gave No. 6 of the ozonometric scale.

This result astonished me. It was not pure oxygen which the plants had secreted, as was admitted, but Ozone.

New experiments seemed to me necessary, in order that all the incidents accompanying this phenomenon might be carefully noted. Bell-glasses were placed over clover, fall wheat, wheat sown in February, over meadow-grass, and over a bunch of lilacs. All of these vegetables produced Ozone. The quantity given by each of them varied slightly; the clover gave less of it than the wheat, and especially less than the meadow-grass, which seemed to indicate that plants have a vital activity which corresponds to the period of their growth, and which, favoring the chemical actions of the life of the vegetable, contributes to the formation of Ozone.

In the experiment which we have just reported, the order of the phenomena was constant; first, an aqueous vapor was seen to appear under the glass, which soon became deposited in lit

the drops upon the walls of the vase, then the paper became slightly colored. This coloration augmented in ratio with the decomposition of the iodide of potassium; it ceased about three or four o'clock in the afternoon; the vapors of water ceased in their turn, and the drops which ran down left the glass clear.

These experiments, repeated a great number of times, gave invariable results, and it was demonstrated effectually, that under the influence of solar light and heat, plants produced Ozone abundantly.

However satisfactory these experiments were, they yet were subject to some objections. Although the formation of Ozone was incontestable, yet was it really due to the action of vegetables? Could it not come from the earth, which also furnished electricity?

To this objection we may reply that the electricity of the soil is negative, and for that reason it could not produce Ozone. But this is an assertion and not a proof; a positive experiment is necessary, as follows:—

Exp. 10.—A branch of lilac, covered with leaves, was introduced into a retort with two tubes; the superior opening was closed by a cork, pierced by a hole, to let the extremity of the branch pass through. The retort was suspended to a beam and elevated three metres above the ground by means of a silk-cord. Every precaution was taken to avoid the action of the terrestrial electricity upon the apparatus. The experiment commenced at ten o'clock A. M., was already in operation at eleven. The paper was colored but slowly, and at six P. M., the reaction ending, we ascertained that the paper marked only No. 3 of the ozonometric scale; while the same experiment, repeated at the same time over plants attached to the ground, gave papers colored to Nos. 5 and even 6 of the scale.

By this experiment, it seems to us to be demonstrated, that the electricity is the result of chemical and vital actions taking place in the plant, since it cannot be attributed to the influence of terrestrial electricity conducted by the stem of the plant into the interior of the retort; and it should be remembered that the condition of the plant lessened the effects produced in the normal state.

The formation of Ozone by plants during the day, being an ascertained fact and quite incontestable, it still remained to be shown whether the same phenomenon was equally manifested at night.

EXP. 11.—Observations were repeated upon every point of experimentation for many consecutive nights. The bell-glasses replaced over those plants which had furnished Ozone during the day, and over others which had been constantly free to the air, remained from eight P. M. until six A. M. The papers were found uniformly white, having undergone no alteration. In order to prove that the papers had not lost their coloring quality, they were used during the day, and gave the habitual reactions.

These observations naturally recalled the effects produced upon plants by withdrawing them from the light of day.

EXP. 12.—Some vigorous plants, furnishing Ozone actively, were covered with some new glasses, surrounded by bands of paper and protected from the daylight by a piece of linen, and others by a sheet of paper; the formation of Ozone was instantly arrested; the paper remained white.

EXP. 13.—We did still more. Plants of different species were placed under a glass, and arranged in a room perfectly well aired and lighted, but removed from the direct action of the solar rays. The experiment lasted two days and a half, and the paper exhibited no change.

It is not unimportant to ascertain, how much in the formation of Ozone belongs to the vital act of the plant, in order to separate it from that which is attached to the evaporation of water which escapes abundantly from the leaves of vegetables.

This is so considerable, that it would hardly be believed, if positive experiments made by men of the highest merit had not demonstrated it.

Hales has proved that a cabbage transpired during twelve hours of the day 580 grammes of water, and M. Boussingault has calculated that a cabbage-field a hectare in size, the plants of which were 50 centimetres apart, can give off in twelve hours 20,000 kilogrammes of vapor, equal to twenty cubic metres of water. (*Economie rurale*, etc., t. I, p. 29.) Let us also add, that leaves, multiplying surfaces, increase in considerable proportion the production of Ozone.

M. Boussingault has carefully measured the surface of the leaves and stalks of the sun-flower, of wheat, of the potato, and of the red beet, and carrying his calculations to a hectare of ground, has given the following results :—

Sunflower, surface of leaves in square metres :—

September,	136,000
Surface of stalks (2 to 3 metres high.)	6,410—142,410

Wheat in flower. 195 plants by sq. metre ; the parts of a plant, stalk and leaf, 1 metre, 82 decimetre sq.	35,400
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Potato in flower, plants 6 decimetre apart :

Surface of leaves,	366,10
Surface of green stalks,	30,31—396,41

Beet, in a very rich ground :

October 1st, (plants 6 decimetres apart,)	49,921
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This enormous evaporation is an abundant source of Ozone : it astonishes the imagination ; but how can we separate that part which is owing to the vital action of the plant. The following experiment answers that question :

Exp. 14.—Two glasses of the same form, each containing a demi-litre, were filled with river water, reversed upon a large porcelain plate, and placed beside each other. In one of these glasses we had placed eight leaves of trees, lilacs and poplar ; in the other there was water only. The experiment commenced at 8 A. M. The sun shone brightly, the temperature was 10° centigrade.

At ten, the leaves, especially those of the poplar, were covered, principally upon their inferior surface, with small pearly bubbles, which gradually becoming detached, rose to the top of the vase. At noon, a large bubble remained ; at six in the evening, it completely separated the water from the glass.

The second vase, which contained water only, exhibited some very fine bubbles clinging to the sides of the glass, and which at the close of the day, hardly formed two bubbles of the proportion of a medium-sized lentil.

This experiment shows that the vital action of plants plays an important part in the evaporation of water, and in the formation of Ozone, and that, for the latter, it is necessary to attribute the greater part to vegetables.

It is then perfectly well established in science, that plants do

not furnish to the atmosphere pure oxygen, as has been supposed, but that they produce Ozone under the influence of direct sunlight ; that they cease to exhale it during the night, in artificial obscurity and even when they are in the diffused light of a room.

The formation of Ozone by water and by plants during the day, is a great act of nature, the existence of which was not suspected, and which we shall soon see exercises a highly important influence upon animals, plants, and upon the production of the electrical phenomena of the atmosphere.

It still remains for us to prove what effects are produced by the earth entirely deprived of vegetation. These effects are various, according to the precautions taken. If the experiments are limited to placing upon the ground a globe furnished with the ozonoscopic paper, it will not be long before vapor of water will be seen to rise under the influence of sunlight, whatever may be the apparent state of dryness of the earth, and become condensed in the form of little drops against the sides of the vessel. In such a case the paper shows a rapid reaction, evidently due to the evaporation of water.

If, on the contrary, the earth be slowly dried, so that it be entirely deprived of water, no reaction will take place, and the paper will remain white.

This experiment gives us many important facts, serving to explain the introduction of gas into the soil. In fact, heated water, by evaporating, makes a vacuum, the gases in contact with the surface of the earth penetrate into the molecules of the soil, and enter with an activity proportional to the intensity of the heat and sunlight. These gases, especially the carbonic acid, become dissolved in the water they meet, which is absorbed by the radicles of plants with a power equal to the evaporation taking place by the leaves. Thus it is, that this movement of rotation favors the accomplishment of the nutritive, calorific, and secretory functions of vegetables, an admirable order of facts, which will attract our attention hereafter, when we speak of Ozone in its relations to vegetable physiology.



### 3. ELECTRIZATION OF OXYGEN DISENGAGED DURING CHEMICAL ACTIONS.

It is easy to show, that in all the chemical combinations with disengagement of oxygen, Ozone is produced. In fact, in every chemical action electricity plays an important part: it appears to constitute the law of affinities. It can be understood then, that under these conditions, oxygen, which always passes to the negative pole being subjected to the influence of electricity, instantly assumes the properties belonging to Ozone.

The characteristics of oxygen in the free state, are given by all authors. It is, they say, colorless, invisible, without odor, gasiform under every ordinary atmospheric pressure, and in the dry state does not act upon metals, and particularly upon potassium, even when moist.

Ozone, on the contrary, has a very apparent odor; it reacts upon metals in the ordinary state, and oxydizes them immediately.

Chemists not being able to explain the phenomena produced by oxygen in chemical reactions, have admitted that latent oxygen possesses properties which free oxygen has not; they have not extended their investigations further, being satisfied with that supposition.

M. Houzeau, not satisfied, tried to obtain latent oxygen in order to ascertain its precise characteristics, by making monohydrated sulphuric acid react at a low temperature upon the binoxide of barium. He succeeded; but what did he obtain? A gas, the characteristics of which are identically those of Ozone.

The following experiment shows the formation of Ozone in chemical actions.

If a solution of the iodide of potassium in distilled water be poured into a test tube, and a small quantity of the starch and acetic acid be added, the mixture remains colorless, but the moment a few particles of the peroxyde of manganese is let fall into the liquid, it turns blue, and reveals the formation of the iodide of starch. What takes place during this chemical reaction? The iodide of potassium, the starch, and the acetic acid remained in presence of each other without producing any combination, but the peroxide of manganese had hardly

been introduced, before the acetic acid reacting upon it, caused it to pass into an acetate, releasing an atom of oxygen which became electrified, seized upon the hydrated iodide of potassium, set the iodine free, and this body combining with the starch, formed an iodide which revealed its presence by coloring the liquid blue; a series of phenomena which would not take place, if the oxygen did not pass into the state of Ozone. To be convinced of this, it is only necessary to obtain oxygen by one of the known processes, and pass it through a porcelain tube heated to about  $200^{\circ}$ , so as to destroy the foreign elements with which it may be united, and then make this gas pass through the mixture mentioned above, it will then be found that this oxygen has no action upon the iodide of potassium, and consequently that it does not favor the formation of iodide of starch.

All the acids, except sulphuric acid, may be employed in repeating this experiment. This last possesses, in fact, a strength sufficient to decompose the hydrated iodide of potassium, and to set the iodine free.

The properties of Ozone explain a number of slow combustions which take place in the open air; they account for the spontaneous passage of many sulphurates into sulphates, for the formation of ozotic acid in the atmospheric air, for the nitrification taking place upon the earth's surface—phenomena which were enveloped in the most profound obscurity, even to the eyes of the most scientific (Boussingault, *Economie rurale*, etc., t. I, p. 675). Finally, they make the following fact, so remarkable by its apparent singularity, easily understood. If a thin plate of gold or copper be dipped into ordinary ozotic acid, these metals are immediately attacked, and rapidly destroyed; but if the acid be concentrated, if it be anhydrous, it loses its power, and remains inactive. Is it not evident, in this last case, that oxygen is wanting, which becomes electrified, to oxidize the metal, and cause its solution.

If, now, we refer this explanation to a large number of obscure chemical phenomena, we shall see that they will be rendered clear by an unexpected light, and that the electrochemical theory receives a confirmation which shows its exactitude and value.

#### 4. ELECTRICITY REACTING UPON THE OXYGEN OF THE ATMOSPHERIC AIR.

We have already shown that atmospheric air, subjected to a continuous and invisible current of electricity, or to a succession of sparks, gives Ozone. But in what region of the atmosphere is this phenomenon produced? Everything tends to convince us that it takes place in elevated regions. There the clouds charged with electricity, establish perpetual currents which act upon the oxygen and give to it the properties of Ozone. This fact is placed beyond doubt during storms, under the influence of lightning, and especially when it strikes. The air is then impregnated with the characteristic odor of Ozone, so often observed in places struck by lightning. Then, also, the ozonoscopic paper furnishes positive indications, it becomes very blue, and gives reactions which frequently attain the maximum of the ozonoscopic scale.

Ozone thus produced does not manifest itself immediately upon the surface of the soil. It is necessary that the superior layers of the atmosphere cooled by the winds and rain, should have time to descend towards the earth, and bring there the oxygen electrified in the high regions. It is on this account that most frequently it is not till two or three days after a storm, that the ozonic reactions are the most active.

From this collection of facts it follows: that nature possesses abundant sources of Ozone; that they exist upon the surface of the globe, and in the elevated regions of the atmosphere; that it establishes perpetually ascending and descending currents of air, exercising a powerful influence upon the production of the grand electrical phenomena, and upon the acts of vegetable and animal life.

The discovery of the sources of Ozone is, then, an event which casts a new light upon the physiology of animals and vegetables, upon the atomic combinations of bodies, and shows that a tie, until now unseen, unites by slight relations, all the bodies of our globe.—*Gazette Hebdomadaire.*

## REVIEWS AND BIBLIOGRAPHY.

"Nullius addictus jurare in verba magistri."

*The Obstetric Memoirs and Contributions of JAMES Y. SIMPSON, M.D., Professor of Midwifery in the University of Edinburgh, etc., etc. Edited by W. O. PRIESTLY, M.D., Edinburgh, and HORATIO R. STORER, M.D., Boston, U. S. Volume II., pp. 819. Edinburgh.*

A few months since, we called the attention of our readers to the first volume of this most valuable work, republished in beautiful style by J. B. Lippincott & Co., Philadelphia. We have not seen the American republication of the second volume, but we hope that it will soon find its place in the library of every medical man, who wishes to keep himself informed of the progress of Obstetrical Science. It is full of most valuable papers, which no man can read or reperuse (for most of them have before appeared in the Medical Journals) without adding something to his stock of knowledge. These two volumes constitute a stupendous monument to the genius, talent, and industry of the author. We cannot review this volume, for the subjects contained in it are too numerous to admit of a consecutive review. In the first volume we have, Part i., Special Pathology of the unimpregnated female. Part ii., Physiology and Pathology of Pregnancy. Part iii., Natural and Morbid Parturition. In the second volume—Part iv. Pathology of the Puerperal State. Part v., Physiology and Pathology of the Products of Conception. Part vi., Pathology of Infancy and Childhood. Part vii., Anæsthesia. We propose to select a few of the more important practical papers for analysis.

1. *Analogy between Puerperal and Surgical Fevers.* According to the reports of the Registrar General, nearly 3000 mothers die in child-bed every year in England and in Wales, and Prof. Simpson believes a great majority of these maternal deaths is produced by puerperal fever.

In the city of New York, the records of the city inspector show that since 1850, the annual number of deaths from this cause, in this city, is about 150. The disease is more common and more severe among the population of towns than among the

population of the country. In the paper of Prof. Simpson, he points out the analogy between puerperal fever and the fever following surgical operations. 1. In the anatomical conditions and constitutional peculiarities of those who are the subjects of them. In the surgical patient, we have a wound or solution of continuity on the external part of the body, made by the knife of the surgeon; this wound has, opening upon its free surface, the mouths of numerous arteries and veins, and it comes to be repaired either by the direct adhesion of its opposed surfaces, or more slowly by exudation of organizable lymph upon its surface and the ultimate formation or development of a new skin, or new enveloping or connecting tissue. In the puerperal patient we have a wound or solution of continuity on the whole internal surface of the womb made by the separation of the placenta and the exfoliation of the decidua or superficial layer of the mucous membrane of the fundus and the body of uterus; this wound has, opening upon its free surface at the former site of the placenta, the mouths of numerous arteries and veins, and it comes to be repaired under the usual accompanying exudation of organizable lymph upon its surface and by the ultimate formation or development of a new layer or coating of mucous membrane. Both the obstetrical patient and the subjects of surgical operations are liable to present the symptoms of shock or collapse, particularly if the labor or the operation have been severe; both have generally a subsequent limited degree of febrile reaction—the traumatic fever of the surgeon,—the so-called milk fever of the obstetrician; and both the external surgical wound, and the internal obstetrical wound, are liable to deviate from the standard mode of reparation; for their secretions may alter morbidly, or they may become the seat of an excess of inflammation, or of ulceration, or of phlebotic suppuration and its consequences.

2. *Analogy in the Pathological Nature of Puerperal and Surgical Fever.* Prof. Simpson does not regard puerperal fever either as an idiopathic or putrid fever, or as essentially a local inflammation of the peritoneum, the uterus, the veins, &c., but rather as due to toxæmia or a morbid state of the circulating fluid. The direct injection of pus and other morbid secretions and matters into the blood of the lower animals by Gaspard,

Cruveilhier, Castelnan, and others, have produced a series of symptoms during life, and a series of lesions on the dead body, showing a very strong analogy to those of puerperal fever. Under this pathological view, the fever is not regarded as the cause of the attendant inflammations, nor the inflammations themselves as the cause of the attendant fever, but both are the simultaneous sequences or effects of one common cause, namely, the original vitiated or diseased condition of the circulating fluid.

3. *Analogy in the Internal Pathological Lesions left by Puerperal and Surgical Fever.* From a table showing the inflammatory lesions in the post mortem examinations of 134 surgical patients (by Chevers), and from the tables of Dugès and Tounelle, the former showing the inflammatory lesions in 341, and the latter in 222 cases of puerperal fever. Prof. Simpson deduces the following conclusions: 1. Both diseases generally leave upon the dead body ample evidence of the occurrence before death of acute and often extensive internal inflammatory action. 2. The internal inflammatory lesions are seldom limited in the same case to one organ or texture only, but two or more different viscera or surfaces are usually observed to have been either the simultaneous or successive seats of inflammatory action, and the different parts thus attacked are sometimes very distant and distinct from each other. 3. The internal viscera or textures, which are the first and principal seats of inflammation, are often far removed from the original wound or lesion, particularly in those cases in which the wound or lesion is in the head or the extremities.

4. *Analogy in the Symptoms of Puerperal and Surgical Fever.* In both diseases the most striking symptoms are rigors, a rapid and altered and frequently darker or almost icteric hue of the surface,—the skin sometimes hot and dry, sometimes bathed in perspiration, or these states alternating, without any material crisis in the febrile action; local pains and functional derangements in the parts which are the seat of the internal inflammatory effusions, but the local symptoms of these local inflammations are often masked and latent; anxiety and general prostration and adynamia; very frequently nausea and vomiting; occasionally diarrhœa, and latterly labored and hurried re-

spiration; sometimes sudden swellings and effusions in the joints and subcutaneous tissue, &c., and often at last rapid sinking, with or without delirium. Dr. Simpson is a full believer in the communicability of puerperal fever. He regards the material which, carried from one subject to another, is capable of producing puerperal or surgical fever in a newly inoculable subject, as an *inflammatory secretion*, not necessarily putrid. He uses, for the purpose of ridding the fingers of this morbid matter, a solution of the cyanide of potassium, which he considers more effective than the solution of chloride of lime. But it is very doubtful whether the cyanide of potassium is in any sense a disinfectant, it acting merely as a solvent or caustic, while chlorine is a most efficient disinfectant from its great affinity for hydrogen.

Our limits will not permit an analysis of the interesting paper on *Puerperal Arterial Obstruction and Inflammation*.

*Tetanus following Lesions of the Uterus, Abortion, and Parturition.* This fearful complication is fortunately a rare occurrence in midwifery practice. But Prof. Simpson details one case following the removal of a polypus from the unimpregnated uterus, seven cases following abortion, and twenty-six after parturition. Of these twenty-six cases, twenty-one died and five recovered. He suggests for the treatment of obstetrical tetanus the following constitutional means:—

1st. "The greatest possible quietude and isolation of the patient from all irritation, corporeal or mental, during the course and for some time even after the resolution of the disease.

2d. The special avoidance of painful and generally impracticable attempts at opening the mouth in order to swallow, but sustaining the strength of the patient, and allaying thirst by enemata, or by fluids applied to the general surface of the body.

3d. If there is any well grounded hope of irritating matters lodged in the bowels, acting as an exciting or aggravating cause, to sweep out the intestinal canal at the commencement of the disease with an appropriate enema.

4th. To relax the tonic spasms of the affected muscles and diminish the exalted reflex excitability of the spinal system by sedatives or anti-spasmodics; with the prospect of either di-



rectly subduing this morbid reflex excitability, or of warding off the immediate dangers of the disease and allowing the case to pass on, from an acute and dangerous attack, to a subacute and far more hopeful and tractable form of the malady."

To fulfil this last indication, no agent has proved so successful as chloroform, which acts as a direct sedative upon the reflex nervous system and upon exalted muscular contractility. If used in tetanus, its action will require to be sustained for many hours, or oftener perhaps for many days. Prof. Simpson suggests that perhaps some of the failures have arisen from the patient not being kept sufficiently deeply, or sufficiently continuously under the action of the drug. He mentions "a case of convulsions of the most severe and apparently hopeless kind in an infant of six weeks. The disease at once yielded and ultimately altogether disappeared under the action of chloroform, which required to be used *almost continuously for thirteen days*; as much as 100 ounces of the drug being used during the period. After all tendency to convulsions ceased, the little patient rapidly grew, and is at the present moment a very strong, healthy child."

The paper on the "Attitude and Positions, Natural and Preternatural, of the Fœtus in Utero," is very important and interesting, but we must content our readers with a mere reference to it, as it will be impossible to give an abstract of it.

The paper on Congestion and Inflammation of the Placenta, was first published in the *Edinburgh Medical and Surgical Journal*, in 1836. It is by far the most complete essay that has yet been written on the subject. We have copious notes of lectures, by Dubois, delivered at the Hospital Clinique, in 1845, and do not perceive, on comparing these notes with the essay of Prof. Simpson, any advance in elucidating the subject beyond the latter. Prof. Simpson concurs with Prof. Dugès in the opinion that the most frequent cause of abortion is active *placental congestion*, in which he includes placental hæmorrhage.

He divides *placentalitis*, or inflammation of the placenta, into three stages, the first including the stage of inflammatory congestion and effusion or secretion of serous fluid; the second, that of the effusion or secretion of fibrin or coagulable lymph; and the third, that of the secretion or effusion of purulent matter.

The symptoms of placentitis are varied, according to its acute or chronic character, by the extent and seat of the inflammatory action, and particularly by its happening to be complicated or not, with inflammation of the contiguous portion of the parietes of the uterus. Pain in the uterine and lumbar regions is observed in almost all cases of placentitis, but it is not pathognomonic of this disease, as it is present in pregnancy as an effect of other pathological states of the uterus or its contents, than placental inflammation.

The other symptoms mentioned are, obstinate vomiting, shivering with febrile symptoms, and where suppurative inflammation of the placenta has existed, a kind of continued hectic febrile movement, with an exacerbation in the evening, preceded or not by shivering. Morbid adherence between the placenta and uterus, the result of adhesive inflammation between their contiguous surfaces, is almost uniformly marked, at the time of delivery, by more or less profuse and sudden flow or gush of blood attending upon each recurrence of uterine pain or contraction after the birth of the child, and even sometimes also during the act of its expulsion. It is not unfrequently attended with great danger to the mother at the time of delivery, or subsequently to that event, from the extreme hæmorrhage to which it sometimes gives rise, from its leading under unskilful management to inversion of the uterus, or afterwards from its retention producing, as it so frequently does, a very fatal form of irritative fever. It also occasionally proves fatal to the fetus in utero.

In another article, Prof. Simpson enumerates as the principal pathological states of the placenta that are liable to produce the successive deaths of a series of premature children in the same mother, *Congestions and Extravasations of blood into the structure of the placenta, Inflammation of the placenta, Gangrene of portions of the placenta, General Œdema or dropsy of the placenta, Stearoid or fatty degeneration, and Hypertrophy*. The diagnosis of the pathological cause of the death of the fetus, in successive pregnancies, can only be made out, with any precision, by having an opportunity of examining the body of one of the fetuses and its placenta. As to treatment, Prof. Simpson believes, that mercury is only useful in those cases of suc-

cessive premature labors, where the child perishes of peritonitis. Where the child dies in consequence of disease, not of its own structures, but in the structure and economy of the placenta, he suggests that efforts be made to supply the functions which the placenta performs in the foetal economy, viz: nutrition and respiration. He endeavors to render the maternal blood as highly an oxygenating medium as possible by keeping the patients constantly on small doses of alkaline salts. He evidently prefers for this purpose the chlorate of potass, in doses of from ten to thirty grains, taken repeatedly during the day in solution, and upon an empty stomach. Where children of the same mother, have died successively from the effects of different diseased states of the placenta, he believes that the induction of premature labor about the seventh or eighth month ought to be a principle of treatment prominently held in view and frequently had recourse to. In three cases of diseased placenta, he induced premature labor successfully in two, as regards both mother and child, one of the patients having previously lost six and the other three children.

We have no room for extracts from Part vi., on the Pathology of Infancy and Childhood. Part vii., on Anæsthesia, has already been republished in this country, by Lindsay & Blakiston, Philadelphia, with the exception of a few papers on local anæsthesia. The paper on Carbonic Acid Gas as a local anæsthetic in Uterine Disease, which was addressed to the New York Academy of Medicine, *but which has not been published by them*, will appear in full in the next number of this Journal.

In conclusion, we can only add, that we regard these two volumes of Prof. Simpson as by far the most important contributions which have been made to obstetrical medicines for the last quarter of a century. We are pleased that an American, every way worthy of confidence, was honored by the association of his name with the works.

B. F. B.

## PROCEEDINGS OF SOCIETIES.

## NEW YORK MEDICO-CHIRURGICAL SOCIETY.

Reported for the MONTHLY by J. O. BRONSON, M.D., Secretary.

Aug. 12. *Dr. Casseday* presented some morbid specimens.

First, a specimen of caries and necrosis of the tibia, removed by amputation from a boy twelve years of age, exhibiting the disease in an interesting manner. The boy was a native of Germany. Two years ago he jumped from the back of a horse, and though not receiving any injury, apparently, at the time, about a year after suffered pain in his leg, which swelled, and finally an abscess having formed and opened, became very troublesome; sequestra of bone from time to time found egress, the disease evidently extending. In this condition he was received into the hospital, July 19th. Following the indications, amputation was performed on the fourth day subsequent. An anodyne was given, and energetic tonic treatment prescribed. The undue use of tartaric acid water induced a diarrhœa, which, however, was controlled by opiates. On the 4th instant, the quinine which had been used was stopped, the boy having become strong and healthy. The stump at the present time is very nearly healed, and presents a very fine appearance.

A sacrum, two or three lumbar vertebrae, and a clavicle in a carious condition, without a history, were also presented by *Dr. Casseday*, in connection and comparison with the first specimen.

*Dr. Casseday* then presented a portion of the internal branch of the radial nerve about one inch and a half in length, exhibiting, in a marked degree, an inflammatory condition. The nerve was enlarged and much injected, especially in its middle portion. The woman from whom it was removed, by accident cut her hand near the phalangeo-metacarpal articulation of the index finger, which, though readily healing, gave her severe pain afterward. Indeed, the neuralgia was so extreme that she lost her rest and sleep. After a time the nerve was divided near the cicatrix, by some physician to whom she applied, which did not relieve her but temporarily. The pain returned, and after suffering it for another period, she applied to *Dr. Carnochan*, who, guided by the pathology demonstrated in the case of neuralgia wherein he removed a portion of the infra-orbital nerve, excised the portion of nerve, the specimen presented. The woman was at once, and remains, entirely relieved.

*Dr. Casseday* also presented a toe-nail, removed from a lady who had suffered, for three years, the pain resulting from its inversion. The various means used in such cases had been tried by her without success. The specimen demonstrated, by the extensive matrix, the reason why no remedy but the knife had been of benefit.

*Dr. Casseday* reported the recovery of the man who had suffered a fracture of the skull, with loss of osseous tissue, whose case was presented to the Society by *Dr. Carnochan*, July 8th.

*Dr. Parker* presented several portions of the intestinal canal of a victim to cholera infantum, with the following history, furnished by *Dr. Lee* :—

Alice Lewis, one year old, a light mulatto, of somewhat strumous appearance, but enjoying, save a slight tendency to diarrhœa, the usual degree of health, was attacked on the 6th of August with a decided diarrhœa, the discharges being green and thin. Chalk mixture with a little paregoric was prescribed, but the day following no amelioration of the symptoms had taken place. The character of the discharges became somewhat more mucous and yellowish in color. There was some tenderness over the abdomen, and watchfulness. The julep was continued, and a weak sinapism, followed by fomentations applied to the abdomen. Up to this time I had considered it a simple case of diarrhœa. On the following morning, however, the child's appearance was materially altered; and its pallid and shrunken, pinched features; its bright, restless eye; the uneasy to-and-fro motion of the head, and extreme irritability of the stomach, accompanied by an increase in the already profuse evacuations; all proclaimed it to be suffering under that so often fatal disease, cholera infantum. Milk punch was ordered to be given constantly, a sinapism applied to the epigastrium, and the chalk mixture continued. At ten P. M., the child had a slight convulsion, followed by coma, with the eyes open and fixed. In this state it expired at five the next morning. The later evacuations contained a little blood.

*Post Mortem.* An examination after death, discovered no effusion into the ventricles of the brain, and no softening of any part, but slight venous congestion throughout. The lungs and heart unaffected. The liver healthy; the gall bladder full, but not distended; the stomach, which had been excessively irritable, exhibited no inflammation, but, on the contrary, was pale. The same might be said of the intestines, which, through their whole extent, presented a remarkably pale appearance, as may be seen in the specimens. The point to be shown, however, is the condition of the glands. The solitary glands

can be seen hypertrophied, and the patches of Peyer are very prominent. There were no ulcerations. The glands, both solitary and agminated, were full and prominent, as if distended with fluid not tuberculous.

*Dr. Conant* presented a skull very extensively fractured, showing the terrible effects of fire-arms when discharged in close proximity to the object, as in this case. A part of the temporal bone was entirely blown away. It was the work of self-destruction.

*Dr. Bouton* presented a stomach, removed from a woman who had died of delirium tremens. The specimen was highly injected indicating a condition and habit on the part of the victim similar to the cases before exhibited to the Society, showing the effect of adulterated liquors. Some discussion was excited by the specimen, as to the kind of liquor drank under such circumstances, ending in the general conviction that brandy, so called, is the most frequent article used.

No other specimen being presented, and the relation of cases being in order,—

*Dr. Conant* gave the history of an interesting post mortem examination made by himself, in July, for Dr. A. K. Gardner. Mrs. —, aged forty-five, had suffered some two years with what was supposed by her attending physician, to be cancer of the womb. She had passed considerable pus from the bladder with the urine, also, something looking rather suspicious from the rectum; hence it was supposed that the rectum and bladder were involved in the malady. Some few months previous to death, she had ceased to pass urine by the natural passage, but it all dribbled away per vaginam. These are all the symptoms manifested during life, with which Dr. Conant is acquainted. The autopsy was made some fourteen hours after death. External appearances normal. Emaciation not great. Thickness of the abdominal parietes not far from one inch; muscles of good color with some fat. The peritoneum was found completely covered by partially organized plasma. There was also about two quarts of fluid, of a purulent nature, in its cavity. The intestines were more or less bound together by bands of organized lymph. Internally they presented no particular marks of disease. Liver normal, perhaps slightly fatty. Stomach, spleen, and Pancreas, all healthy. The left kidney was somewhat congested, while the right one contained a large abscess which occupied the entire lower half of the organ; the ureter upon this side was somewhat thickened, though the canal was free. The bladder, uterus, and rectum, were removed

in a mass, that they might the better exhibit their precise condition. The mucous membrane of the vagina was apparently studded with small calcarious deposits, so thick as to give it the appearance of coarse sandpaper. The entire posterior wall of the bladder was gone, as was also the corresponding portion of the vagina. There was no opening of a fistulous nature into the rectum. The womb was a mere shell, amounting to nothing more than the peritoneal lining, upon the whole of which was attached small bits of ragged uterine tissue, as though the whole organ had been eaten away by a corroding ulcerative process from below upwards. The same roughness continued upwards into this uterine shell, though not quite as well marked as in the vagina. There was no sign of an os uteri to be found. The thoracic organs were healthy except some slight pleuritic adhesions, and very slight atheromatous deposit in the aorta.

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NEW YORK PATHOLOGICAL SOCIETY.

Reported for the MONTHLY by E. LEE JONES, M. D., Secretary.

June 25th.—*Dr. Alonzo Clark* presented a heart removed from a child, which lived six days and one hour. The case occurred in the practice of *Dr. Blakeman*, who attributed death to some malformation of the heart. At the request of *Dr. Blakeman*, he examined it, and on inspection it is seen to be a *single heart*, with one ventricle and one auricle, and apparently there is no attempt to produce another ventricle or auricle. The aorta is large. One large vessel arises from the ventricle. From the aorta, at a low point, two vessels are given off. In what manner the blood was conveyed to the lungs is not clearly manifest, though he conjectures that these two vessels were the pulmonary arteries. The child suffered but little inconvenience, was a little blue in the face, was well grown and plump.

*Dr. Clark* then exhibited a specimen of common occurrence, and not of much interest in itself, namely: a portion of fungus cerebri, following a severe injury.

It was placed in his hands by *Dr. Buck*, and at his desire, he examined it by the microscope, with a view of ascertaining the nature of the material constituting the excrescence.

Surgeons generally consider it to consist of the substance of the brain; he, however, failed to discover brain matter of either kind, but cells and granules were observed in considerable quantity. No nerve



fibres were seen. It was constituted differently in different portions. One part is composed of granules of various sizes, greatly resembling in structure the diptheritic membranous exudation, described by Bretonneau, and a specimen of which was laid before the members at a meeting of the Society some months ago. (in February, 1855). Another part is seen to consist of granular cells with minute nuclei, and another contains cells with large nuclei and nucleoli. No part of the cranium could produce a substance similar to the second variety. It is constituted altogether independent of brain matter. In the first and second parts single fibres are seen.

*Dr. T. C. Finnell* presented a calvarium, removed from a patient fifty years old, who died of acute bronchitis. On the superior portion of the internal table are four depressions, caused by the pressure of the Pacchionian bodies. In three of them the absorption has extended through the diploe, leaving only a thin shell of bone between the dura mater and the exterior of the cranium.

*Dr. Finnell* next exhibited the heart of a boy who died of acute meningitis. He had always enjoyed good health. Two days previous to his death he was exposed to the sun. In the evening he complained of pain in his head, and during the night he vomited, had high fever, and soon became delirious. Towards the next evening coma commenced, accompanied by slight convulsive twitchings, which recurred at intervals until death, which took place about forty hours after the attack.

Autopsy, twelve hours after death, revealed the anterior surface of the brain covered with pus; no arterial congestion. Sinuses moderately filled with blood.

Lungs healthy, but adherent at several points. Mesenteric glands enlarged.

*Dr. Finnell* then presented an uterus, obtained from a married woman, the mother of five children, showing ulceration of the mouth of the womb. The mucous membrane of the upper part of the vagina, together with the os and cervix uteri, were intensely injected, softened, and in some places presented to the finger a roughened surface. Cause of death, apoplexy.

*Dr. Cox* presented a specimen of serous cysts of the kidney for *Dr. H. N. Bennett*, of Bridgeport, accompanied by a written history.

The pathological specimen here presented, was taken from a gentleman, 48 years of age at the period of his death. In a symptomatological point of view, I believe this case to have been almost unique. I had been the medical attendant of this man for thirteen

years previous to his decease, and during that period he for the most part enjoyed firm health, having a robust frame, and a degree of embonpoint approaching at times to corpulence. The only exceptions to his general good health were occasional attacks of what was considered indigestion, the result or accompaniment of some functional derangement of the liver. At these times he suffered much from abdominal pains, gastric irritability, and diarrhœa; the skin became slightly tinged with yellow, the tongue covered with a thin yellowish coat; the quantity of urine was never much diminished, but during the latter years of his life was much increased, and he was commonly required to rise once or twice each night to void it. The patient dated these attacks from a severe dysentery many years previous, since which time he had had, to use his own familiar expression, these "*troublesome bilious turns*," generally but once a year, however, and that during the Summer season. Appropriate treatment directed to the alimentary canal and liver, always relieved these indispositions in a short time.

The Summer previous to my patient's death, his health became more seriously impaired, and his indisposition was more persistent. At this time constipation took the place of diarrhœa, but the same loss of appetite, gastric irritability, pale yellow tinge of the skin, &c., occurred as on former occasions. After the severity of the symptoms had subsided, I advised him to a change of air, and acting upon this advice he made a visit to the western part of New York, remaining there several weeks. He then returned home much improved, and continued through the Winter to enjoy comparative health, but not the vigor of former years. In the month of April he began again to decline, presenting the same train of symptoms as during the previous Summer, with the addition of considerable dyspnœa upon slight exertion. I now began to feel much alarmed at his condition, and thoroughly examined the thoracic organs, fearing that there might be organic disease in that region, but could detect nothing whatever. The alvine evacuations at this time were also perfectly normal in appearance, showing no deficiency of bile or anything to suggest the existence of organic or even functional disease of the liver. Under these circumstances, I naturally adopted the diagnosis by exclusion, and directed my attention to the kidneys. The urine was of very nearly normal appearance to the eye, but upon testing it with heat and nitric acid, I found it contained large quantities of albumen. The quantity of urine was above the normal standard, and its color somewhat paler than usual. It must now be

borne in mind, that my patient had never complained of pain in the renal region, had never had œdema of the extremities, or effusion in the serous cavities, had never manifested any of the cerebral symptoms common in Bright's disease, in short, had never exhibited any of the more positive diagnostic symptoms of organic disease of the kidney. But here was evidently the sole seat of organic disease. This case is still farther remarkable, inasmuch as none of these symptoms were developed up to the period of death, with the exception of coma a few hours before dissolution.

Some six or eight days before his decease, my patient began to complain severely of sore throat, and this anginous affection appeared to increase in intensity, up to the last day of life. The mucous membrane of all the posterior fauces exhibited a deep red color, very nearly resembling that of the angina which usually accompanies erysipelas. The dyspnoea at this time was very great and formed the most urgent symptom. Nothing afforded even temporary relief, and he gradually sank, becoming comatose a few hours previous to dissolution.

*Post Mortem.*—The autopsy presented a remarkably healthy condition of all the thoracic and abdominal organs, with the exception of the kidneys. These were both much increased in size, the enlargement being the result of the development of numerous cysts in the whole substance of the organ. They varied in size from that of a large filbert to that of a pin's head. The majority were filled with a clear albuminoid fluid, having not at all the odor of urine; a portion contained a muddy fluid, varying in color from a deep brown to a brick dust red, appearing to me like the *debris* of old extravasated blood mingled with the clear albuminoid fluid above-mentioned. Portions of the tubular substance of both kidneys appeared to be in a comparatively normal condition, but the cortical substance seemed almost wholly in a degenerated state, and here the cysts were large and very numerous.

The development of cysts in the kidney is by no means a rare occurrence, and their genesis is so well determined that it would be idle for me to attempt to present anything new upon this subject; but I believe it to be very rare that this degeneration proceeds to so great an extent as in the present case, while the general health is so well and so long preserved, and so few of the ordinary symptoms of renal disease are developed. The organic changes in this case must have been the work of years; and yet, up to a few months previous to dissolution, no serious derangement of the general health occurred,

and no symptom pointing directly to the seat of disease. I attributed the dyspnœa accompanying the termination to uræmic poisoning, as it was too gradual and of too long continuance to admit of the supposition of œdema glottidis, one of the very rare terminations of *morbus Brightii*.

The only plausible explanation of the great want of renal symptoms for so long a period in this case, appears to me to be in the hypothesis that the cyst-formation was the predominant pathological element, and that a large number of the urinary canals remained for a long time previous, and in a comparatively normal state. It may readily be conceived, adopting the cyst-genesis of Frerich and others, that the blocking up of isolated tubuli by the fibrinous exudation, and the consequent distension of the Malpighian capsules into cysts, might go on for a series of years before involving so large a portion of the kidney as to cause the system seriously to feel the organic change and consequent loss of function; and furthermore, this gradual degeneration of the kidney would be much better borne than a sudden change in a large portion of the organ, such as is common in other more acute forms of Bright's disease.

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#### CHRONICLE OF MEDICAL PROGRESS.

*Results of the Quantitative and Qualitative Analysis of Homœopathic Medical Preparations.* By EDWARD H. PARKER, M.D., of New York City. Read before the New Hampshire State Medical Society. (*From the Transactions.*)

During the last two years my attention has been repeatedly called to the drugs used by gentlemen professing to practice medicine "homœopathically." In consequence of my observations I determined, as opportunity offered, to obtain specimens of the remedies actually used by these practitioners, and sold by various pharmacutists, and to submit them to an experienced chemist for analysis. This has been done in three instances with the following results:

The first analysis was made of the contents of two vials, marked respectively *Mercurius Solubilis*, and *Arsenicum*. This is their history.

A gentleman with whom I had become acquainted in some business connections, often talked to me of his health, and of the treatment to which he was subjected by a prominent homœopath of this

city. Among other powders, he showed me some which he was taking, and which I was sure contained a notable quantity of nitrate of silver. He also praised the treatment to which his child was submitted when it had a diarrhœa from teething, or other cause. A gray powder and a white one were given alternately, and the child liked to take them. His wife kept them constantly by her, and if the child had a discharge from the bowels which she thought was a little too loose, she would give her a few doses of these powders. She thought, however, that the blackish powder (*merc. solub.*) did the most good. My friend constantly urged me to try them, for, I think that because I did not rail at homœopathy, but spoke of its practitioners as I would of other gentlemen, he had some hopes of converting me to his faith, than which I can conceive of no more preposterous supposition. Finally, I requested him to procure for me some of the same powders he was using for his child. This he did, and I placed them in the hands of Dr. Arthur Du Berceau, of this city, who is a skilful analytical chemist. This is his report :

One hundred parts of white powder, marked *Arsenicum Alb.*, contains 1.112 of *Arsenious Acid*. The remainder is *cane sugar*. The Second, marked *Solubilis Mercury*, contains in one hundred parts 11.00 of *Metallic Mercury*. The remainder is *cane sugar*. The mercury was in the condition of black oxyd, obtained by the reaction of proto-nitrate of mercury and ammonia.

The mother, when told of the amount of mercury and arsenic which she had been giving to the child, was horrified, and has since used them less indiscriminately.

At my request the same friend purchased for me a case of medicines of a homœopathic druggist. It is like those which he ordinarily sells for family use. This I also placed in the hands of Dr. Du Berceau, and he obtained the following results.

In the bottle marked Calc. Carb., 100 parts of powder contain 1.066 Carbonate of lime.

In the bottle marke Carb. Vegetabilis, 100 parts of powder contain 0.500 fine Charcoal.

In the bottle marked Arsen. Alb., 100 parts of powder contain 1.120 Arsenious Acid.

In the bottle marked Mercur. Solub., 100 parts of powder contain 1.350 Metallic Mercury

In the bottle marked Hepar. Sulph., 100 parts of powder contain 0.900 Sulphur.

In the bottle marked Stibium, 100 parts of powder contain 0.500 Oxyd of Antimony.

In the bottle marked Sulphur, 100 parts solution contain 0.100 Sulphur.

In the bottle marked Phosphorus, 100 parts solution contain 0.430 Phosphorus.

The fluid contents of the vials in the case, with the exception of the last two in the preceding list, were not examined, partly because I wished to preserve them to satisfy the minds of those who might desire to see for themselves ; and partly because it is so difficult to do anything more than to ascertain the quantity of solid matter which remains after evaporation of the menstruum. The qualitative analysis of organic substances is well known to be one of the most difficult and uncertain of the operations of the chemist. The sugar in these powders was that obtained from milk.

It will be observed, that in this instance the arsenic and soluble mercury are the strongest preparations, though the latter does not compare in its amount of metallic mercury with the proportion found in the first analysis. These two remedies seem to be great favorites with homœopaths, being frequently prescribed by them. Why this is we now understand.

About the same time I obtained a set of preparations which had been used by a physician who determined to try his hand at homœopathy, and took advantage of the position which he occupied in one of the dispensaries of New York to make his experiments. After his resignation, the preparations which he had been using were left in the hands of the apothecary of the institution, and some of them were selected by me for analysis. They were purchased at a different shop from those which were before analyzed, and the direction given was, that when about two-thirds of the vial in any bottle (they were all solutions,) were used, the vial should be filled up with proof spirits. This will, perhaps, account for some of the variations in the strength of the preparations. It was found that there was of—

Tincture of Silica, in 100 parts 0.025 of Silica.

Tincture of Hepar. Sulph., in 100 parts 0.050 of Hepar. Sulph.

Tincture of Baryta Carbonica, in 100 parts 1.450 of Carbonate of Baryta.

Tincture of Calc. Carbonica, in 100 parts 0.500 of Carb. of Lime.

Tincture of Arsenica, in 100 parts 0.025 of Arsenious Acid.

Tincture of Carb. Vegetabilis, in 100 parts 0.050 of Charcoal.

Tincture of Mercurius Solub., in 100 parts 0.100 of Solub. Mercury.

Tincture of Lachesis, in 100 parts 0.025 residue after evaporating the alcohol.

Tincture of Sepia, in 100 parts 0.025 residue after evaporating the alcohol.

Some of these preparations, as the *Baryta Carbonica*, contained a thick sediment which carried up the per centage. The other preparations which were left were vegetable, and were therefore excluded from the analysis.

These are all the analyses which I have yet caused to be made, but they are somewhat instructive. The first two preparations were obtained by the direction of a homœopathic practitioner, and one of them, the *merc. sol.*, is more than one-tenth pure mercury, the proportion of the oxyd being consequently somewhat greater. The "*arsenicum*" contains 1.112 parts of arsenious acid, while the usual form in which arsenic is given, viz : Fowler's solution, contains one-half a grain to each fluid drachm, the dose for an adult being about ten drops.

The second analysis was of drugs sold for "family use," and it is observable that the *arsenicum* is even richer in arsenious acid than the first. The *mercurius* has a much smaller portion of metallic mercury, and yet there is sufficient in it to produce all the effects of this metal when given in small doses. The tinctures accompanying the powders, are, so near as I can tell by the ordinary modes of examination, of as great if not greater strength than the corresponding preparations used by physicians. Though contained in small ounce vials, their color is marked—the *Rhus Toxicodendron*, for instance, being of a deep olive color, as is also the tincture of *Dul. camara*. *Ipecacuanana*, *aconite*, *arnica*, *cantharides*, all give tinctures of decided color in these small vials. The *aconite*, indeed, I have used for patients, and find that it produces the same results that ordinarily follow the use of the saturated tincture. Having occasion to use tincture of chamomile, I had some made by a druggist, and filled one of the vials with it. The color of the homœopathic preparation was quite as marked as the other. The tincture of *china*, which being translated means *cinchona*, is a good simple tincture of Peruvian bark.

The third set consists of much weaker preparations, and yet here it is noticeable that, excepting the carbonate of lime and the carbonate of baryta, *merc. solub.* stands highest in its proportion.

If an average is made of the per centages of these three analyses we shall have this result : for the first 6.056, for the second .745, for the third .250. In contrast with these figures others may be put, showing the per centage of the drug which is left, in prepara-



tions made according to the directions of Hahnemann for potentizing medicines. The first dilution has in 100 parts 1 part of the drug. The second dilution has in 100 parts .01 part of the drug. The third has in every 100 parts .0001 part of the drug. Beyond this it is not necessary to go; though every one remembers how much stress was and still is laid upon high potentizations, those who use the thirtieth dilution being considered very moderate. The two hundredth is much preferred by some, and yet the weakest preparation of these three classes, obtained from direct sources, is stronger than the second dilution.

It may be asked how it is that such an abandonment of "potentization" should have occurred among homœopaths themselves, for these drugs came from their pharmacutists, from the shops patronized by all the prominent men of that school in this city. The question can be answered only by referring to the positions which they now occupy. If these gentlemen are shown such proofs of the strength of these preparations as these analyses afford, or such as the very appearance of their tinctures gives, they will not for a moment deny that we are correct, or that there is anything in this which is inconsistent with homœopathy. They will say they are *homœopathsists*, but they are not *Hahnemannists*. O no! not they. How could one be so stupid as to make such a blunder. They believe in the doctrine, *similia similibus curantur*, but they do not find that potentization as taught by Hahnemann is borne out by experience. To be sure, this is no more than the whole medical profession has been saying ever since the absurd doctrine was propounded, and it is no more than common sense teaches; but if one suggests this to them, and congratulates them on their returning senses, he gets very little thanks for his trouble. The fact, however, of this entire change of position should be more generally known and appreciated by the profession than it is, so that we may not waste time in assailing a position which has been entirely abandoned. It is safe to attribute any supposed effect of a decillionth of a grain of charcoal to imagination, but it is not quite safe to attribute to the same influence the effects of five drops of saturated tincture of aconite. Under these circumstances it might happen that a homœopath and a physician would both treat a patient in the same way, their only difference being in their process of reasoning. Both give quinine in intermittent fever; the homœopath because, as he alleges, it will produce in a healthy person similar symptoms; the physician for the reason that he knows it usually cures the disease; not, as is slanderously report-

ed, because he believes it will produce symptoms unlike intermittent fever. He is no *allopath*. It did in fact happen to a friend of mine to be asked to see a patient who was under the care of a homœopath, not in consultation with him, but because he was desired to give his opinion whether or not it was safe to trust the patient still longer under the treatment. The disease was typhoid fever, and he found *Spiritus Mindereri* and all the usual remedies in ordinary doses, the patient doing very well. He could not but say to the attendant, "if this is homœopathy I am a homœopath." To be sure the physician may write a prescription for *cinchona*, and the homœopath may write one for *china*; or the one for *hydrargyri oxidi nigri*, and the other for *merc. solub.*; one for *antimony*, and the other for *stibium*, but both mean the same thing, and the patient will receive the same drug.

It is a question of practical interest to the profession to ascertain what there is of good, if any, in homœopathy. Almost every "new school" enables us to gain some profitable suggestions, which repay the labor of sifting them out of a large mass of chaff. The Hahnemannists have tried experiments in the treatment of diseases with nothing which we should not have been justified in making, and they have thus taught us something in the natural history of disease. In their progress from infinitesimals to large doses, it has been necessary for them to conceal the change in their medicines, and therefore they have studied the art of giving medicines in the most agreeable, or in the least offensive form, and in this respect we can learn something from homœopathy. The old school of practitioners, who, when called to a patient's house, seemed to make it their first duty to fill it with eight-ounce vials, have not entirely passed away, neither have their abominably tasting compounds entirely disappeared. Their big bottles, their table spoonful doses, their nauseous mixtures, have driven and still do drive family after family to homœopaths, simply because it is not human nature to desire to drink such a mixture as tincture of aloe and assafœtida with castor oil and turpentine in equal parts, a wine glass full at a time, if almost tasteless water or a sweet powder will accomplish the same good. To doctors, even, when they fall sick, an agreeable draught is preferable to one the very thought of which stirs them to their lowest depths.

It is not necessary to point out the mode in which concentrated tinctures can be made to supply the place of less powerful preparations. Neither is it necessary to do more than hint at the frequent desirableness of giving small doses often, rather than a single large draught. A few drops of aconite tincture, in water, is vastly pleasanter

than even spiritus mindereri or sweet spirits of nitre. The dose of Norwood's veratrum viride is much pleasanter than infusion or even tincture of digitalis.

But the lesson is more important with reference to powders. For adults, solid substances can usually be given in pill form, but there is no necessity of rolling them in powdered aloes. To this day I can not rid myself of the remembrance of the disgust with which I used to swallow pills so coated, and with difficulty convince myself that the druggists now use only liquorice or more tasteless powders. Still, for these pills we need not select the most bulky drugs. The active principles of plants, when isolated, aid us in diminishing our pills, and will still more when their powers and properties are fully tested.

Children, however, do not readily swallow pills, and agreeable powders are often a great desideratum while treating them. A child's life may depend upon his taking remedies willingly and without compulsion. Thorough trituration of the drug with sugar seems to accomplish this best, especially if, when it is practicable, the doses are divided, but repeated oftener. The homœopathic dispensaries direct that powders should be placed upon the tongue and allowed to dissolve, when they are to be washed down with a good draught of water. There is some philosophy in this, for the dissolving sugar first gives the impression to the nerves of taste, and the water washes down the balance almost untasted. In the minds of children, moreover, the first taste seems to be associated with the fact of taking the powder, while the second and more disagreeable one is not remembered against the dosing. To avail one's self of this fact, it is necessary that the sugar should be reduced to an impalpable powder; otherwise the end is not obtained. If, for instance, ordinary crushed or granulated sugar is used, it will be found that it is not an actual powder, but a mass of more or less complete crystals. On mixing a powder with these it either falls to the bottom, or, clinging to the crystals, coats them over. In this condition the sugar is less readily dissolved than when in powder, and in addition, each crystal is covered on its outside with the drug, which is first dissolved and gives its taste to the whole mass. Here, then, is the advantage, and the only one of the triturations recommended by Hahnemann.

*Operation by the Ecraseur.*—A singular-looking horny growth, a warty exudation from an epithelial cancer of the scrotum, was removed by the Ecraseur, by Mr. Stanley, at St. Bartholomew's, on the 5th instant—the first opportunity, perhaps, which has been afforded of using the instrument in London. The mode of removal of such growth seems to be by strangulation; the Ecraseur consists essentially of a loop of jointed chain, not exactly like a chain-saw, but with a blunted serrated edge; this loop is tightened or slowly worked upon by a wheel and ratchet attached to the handle. The part of the scrotum to be removed was first isolated by a thread tied tightly round it, and next the loop of the Ecraseur was applied so as to strangulate it; the chain was next gradually tightened four times each minute, by a given movement of the handle of the instrument, till at last, in about four or five minutes, the part fell off, quite cleanly amputated. Very little or no blood was lost by the operation; but subsequently a slight exudation of blood, as we might have expected, was observed. The man having been placed under chloroform, no pain was caused; while the absence of knives, forceps, &c., had an effect more easily perceived than described. With quickness, it seemed as if the parts could be all amputated and brought into apposition again without any pain or hæmorrhage whatever. This dispensing with the ligatures of vessels, so troublesome after some operations, and the absence of that plunging of the patient, as he regains consciousness, while the ligatures are being tied, was also very generally observed. With the aid of chloroform, it seems the very perfection of operative surgery, if perfection be allied to absence of bleeding and absence of pain.

Mr. Stanley related another case of singular horny growth from an old lady's head, springing from one of the common painful encysted tumors of the scalp. This preparation is of immense size, and is preserved in the museum. Here Mr. Stanley, we believe, enucleated the root with a knife; before chloroform was invented, the operation being very agonizing. It was stated by Mr. Paget, on the other hand, that the new instrument had removed the thigh of a large dog, under chloroform, without hæmorrhage, and without apparent suffering; so that, if not open to the objection of causing tetanus (which we should, on theoretic grounds, fear), the Ecraseur bids fair to be a most valuable invention.—*Association Med. Jour.*

A writer in the *North British Review* for August (Am. Ed.), makes the following curious comparative statements upon the length of life of the late Samuel Rogers :—

A man who lives ninety-three years is remarkable,—much more a poet who lives ninety-three years,—and more still, a poet who lives ninety-three years in the very centre of the social and literary activity of his country, and in possession of such means as enables him to be in cordial and even influential relations with it all. Ninety-three years ! Why it is no insignificant bit of the entire duration of the world ! Seventy Samuel Rogerses, at this rate, might shake hands in an unbroken chain up to Adam ; twenty would connect us with the commencement of the Christian era ; nine would take us back, with room to spare, to the date of the Norman conquest ; and three linked together would reach into the age of Shakespeare. What Samuel Rogers lived through, therefore, between 1763 and 1855, was, measuring by bulk alone, a seventieth part of all that has taken place on the earth since first there were human beings upon it ; it was a twentieth part of all human history ; it was a ninth part of all that Mr. Macaulay would include in the truly national History of England ; and it was about a third part of properly British history, or of the history of England and Scotland since their union.

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*Case of Three Bronchi Springing from the Trachea.* By M. E. LEUDET.

I have met this anomaly, which is rather rare, in the dead body of a man who died of pulmonary phthisis in May, 1855, in the Hotel Dieu, at Rouen.

The third division of the trachea, which was much smaller than either of the others, passed to the upper lobe of the right lung. The arrangement of its cartilaginous rings was completely analogous to that of the other bronchi ; it took its origin from the same point as the two normal ramifications. The right lung was therefore furnished with two bronchi, and the left with but one.

This anomaly, though tolerably rare, has been before observed ; thus M. Cruveilhier states that he saw a little bronchus arise directly from the lower part of the trachea and pass to the summit of the right lung.—*Gazette Medicale de Paris*, July 5, 1856, p. 420.

*Deductions from Prussian Vital Statistics.* By E. B. ELLIOTT.

Population of Prussia at the end of the year 1840,	14,928,501
Excess of births over deaths during the three years 1838, 1839, 1840, - - - - -	486,937
Proportion of annual marriages during the two years, 1840-41, to the population at the end of 1840, 1 per cent. (.899) or - - - - -	1 in 111
Average annual number of persons married during the same period, 2 per cent. (1.80) of population, or -	1 in 56
Average annual number of births, stillborn included, of the two years 1840-41, 3.95 per cent. of population, or	1 in 25
Average number of births, stillborn excluded, of the same period, 3.80 per cent. or - - - - -	1 in 26
Average number of deaths, stillborn included, of the same period 2.81 per cent. or - - - - -	1 in 36
Average number of deaths, stillborn excluded, 2.64 per cent. or - - - - -	1 in 38
Average number of deaths among those over 5 years of age, of the same period, 1.73 per cent. of the population over 5 years of age, or - - - - -	1 in 58
There died over one year of age, of total births, 18 5 per cent. or - - - - -	1 in 5 (5.4)
There were stillborn of male births, 4.2 per cent. or -	1 in 24
There were stillborn of female births, 3.3 per cent. or -	1 in 30
There were stillborn of total births, 3.8 per cent. or -	1 in 26
The ratio of male to female births, stillborn included, for the twenty-six years 1816-41, was as - - -	106 to 100
Stillborn males to females for the three years, 1839-41	136 to 100
Of total deaths during the three years, stillborn excluded, there attained the natural term of life, and died of the debility of old age, - - - - -	12 per cent.
There died by suicide, - - - - -	4 per cent.
There died by accidents of all kinds, - - -	1.5 per cent.
Of female deaths there were in child-bed, - -	2.4 per cent.
The number of deaths of women in child-bed to the total number of births, stillborn included, was - -	.79 per cent.

**EDITORIAL AND MISCELLANEOUS.**

In continuing the subject of Hospital Nursing, which we discussed at some length in our last issue, we remind our readers that we had arrived at a description of what has been done in our country to accomplish the introduction of Sisterhoods, having this for their especial object. In comparison with what we have found in Europe, our own country furnishes but a few examples of what can be done in this department of charity. We have alluded to the extent to which the Order of St. Vincent de Paul has been introduced, so far as its members concern themselves with hospital duties, omitting in our enumeration those who are concerned in the other objects of the Order, as education. The first Protestant Sisterhood which we can boast, is an offshoot from that parent institution at Kaiserswerth, to which we have had so frequent occasion to allude. It was established at Pittsburg, Pennsylvania, in 1849, by the exertions of the Rev. Mr. Passavant, a Lutheran clergyman, who had become acquainted with the Order in Europe, and desired earnestly to introduce it in this country. Four "deaconesses" were sent out by Pastor Fliedner, from Kaiserswerth, and he himself accompanied them to assist in the opening of their institution. We believe we are correct in stating that they have a hospital with between thirty and forty beds, and an asylum for orphans, though we are not able to give so full an account of it as we had hoped to do.

The second Protestant Sisterhood of this country, is that founded in the year 1852, in connection with the Parish of the Church of the Holy Communion, in this city, under the care of the Rev. Dr. Muhlenberg. It sprang from an earnest desire on the part, not only of the clergyman, but of some highly accomplished and earnest-minded ladies to meet the want, which was everywhere apparent of just such an organization. It has not had the prestige of age, or of introduction from a foreign country, but has been compelled to struggle on against reproach and misrepresentation, its members disregarding these if good might be done. There is a small hospital of some fifteen beds under their charge, while a dispensary is open daily for all, within a certain district, who choose to apply for its assistance. One of the Sisters acts as apothecary, putting up all the prescriptions with, at least, as great accuracy as is done in other similar institutions. At Baltimore and Chicago, we believe some steps are being taken for similar organizations, to which we must wish God speed.

In a little work published in England, on the subject of Hospitals



and Sisterhoods, we find the following sentence in connection with the mention of the institution at Pittsburg :—"The Protestant women of America do not, however, seem much disposed to the self-denying work of a Deaconess, and only six have come forward since its opening as probationers." In this there is too much truth, and yet we are rather of the opinion that prejudice, founded in erroneous opinions, more than lack of self-devotion, are the cause of this backwardness. We are permitted to insert the following upon this point, written by one deeply interested in, and entirely familiar with, the subject :—

"The results thus far prove, unmistakably, the value, both physically and morally of such agency in hospital work ; but it must be confessed those offering themselves for this service are fewer than might have been expected. Enough, indeed, have come forward to prove that there are among us Christian women, ready in heart and hand for this labor of love, but the number of these is very small compared with the need there is for them, and compared, too, with what we know of the amount of female piety and devotedness in the several congregations of our city. The *private* character of the institutions referred to, and more particularly that of the Church of the Holy Communion, may in some degree account for this ; but is not a truer explanation to be found in the *false custom*, which has so long excluded cultivated women from this noblest and most disinterested exercise of the best gifts and qualifications of their sex ? Let us break down this barrier, by throwing open the wards of our hospitals to such nurses, offering them (under regulations suited to the peculiar economy of each institution,) the sanction, encouragement, and protection, without which *ladies* could not be expected so to engage themselves. Let us invite them, urge them *by the need there is of their services*, to co-operate with the physician in his sacred duty, and we shall see whether there will be altogether lacking a parallel to the hearty response which the women of England made when the cry came for nurses for the Crimea. Says one of their writers in a pamphlet bearing upon this subject,—'With the news of the victory of the Alma, there came also the tidings that three thousand wounded men lie, helpless and unassisted, in the hospital at Scutari, with their wounds festering in their flesh for want of nurses to attend them. The whole country is roused ; help must be found and that without delay ; newspapers are inundated with letters and suggestions, and the bitter, long-standing prejudice of well nigh an entire people is blown to the winds before the irresistible power of a practical necessity. . . .

Within three days of the time when the want was first made known, *two hundred and eighty* women of gentle birth, applied for permission to go out to the East as nurses, showing by the most incontestible proof what treasures of devotion and self-denial, what wealth of energy and talent, whereby thousands might be influenced for good, have been wasted and destroyed by the wretched, narrow-minded system already described.'

Now it is true, we cannot offer our countrywomen the chivalrous excitement of a journey to a foreign land to nurse wounded soldiers, neither can we give them for leader, a heroine of Florence Nightingale's intellect, nerve, and devotedness; but the elements of our nature are the same here as there, and there are, as has been shown, multitudes pining in our hospitals for want of refined female sympathy and care, and there are, we will not doubt, many American women abundantly qualified or willing to learn to qualify themselves for such ministrations, were the field for their exercise fairly opened to them.

Should we at least conclude otherwise until the opportunity has been given?"

Medical men possess no little influence in such matters, for to them is the question frequently put, whether or not such a radical change in this department of our hospitals would be desirable. It is because this is so that we have ventured to bring the topic forward somewhat prominently, that when occasion offers, they may be prepared to give an intelligent, unbiased opinion upon the subject; that they may not allow an opportunity to slip by for encouraging so excellent a work without doing all they can in its favor. It has been our endeavor to show, that the objections which Protestants entertain to sisterhoods, are in part unfounded, and in part foreign to such organizations; that not only reason but experience has shown that these organizations are useful, that their place can be supplied in no other way, and that the patients would be greatly benefitted by such care.

Upon another point we again touch. Hospitals are one of the blessings which christianity has brought in its train. In their original arrangement, provision was not only made for the care of the body, but also for the well-being of the soul. Religious instruction was furnished to those who were the recipients of its care; and thus it was made a double blessing. But of late years, and more particularly in our own country, care of the body has been their sole end and aim; that which we regard as being, to say the least, equally

important, being entirely neglected. The causes of this are not difficult to discern. It was formerly the case that building hospitals was the direction in which ran the ideas of religious men, and by their diligent care and thoughtful foresight, as well as munificent donations, they were placed upon a firm basis. Almost every government of Europe recognizes some form of religion as being that of the State, so that its support is one of its objects. Whenever, then, a hospital has been founded, it has been with full consciousness of religious responsibility, and the State has not hesitated to lend to it its assistance with especial reference to the same religious aim. In our country it is different. Here the State separates itself from the Church, and although religion is the basis of our institutions, directs in the formation of our laws, and underlies our whole social fabric, the State does not formally lend it any assistance. The State neither enforces nor suggests any uniformity of religious faith, but tolerates all, even to the wildest vagaries of the followers of the Mormon Smith. When, then, an institution asks for aid from the State, it does not go as a religious body to the authorities of the Church, but has especially to disclaim or to keep out of sight its connection with any religious fraternity. Such a connection does in fact directly lessen its chances of success, for its opponents shout out the war cries of all opposing religious parties, and the door of the public treasury promptly closes in the face of the needy applicant. Medicine then stands triumphant, the first, the only thing that is paramount in the institution, the only thing the State dares support. Hence has come the entire separation of hospitals from one of the great purposes which they are able to accomplish, and to which we would that they could be recalled. In the quiet unobtrusive but effective labors of the members of sisterhoods, we see the only chance of this restoration. Let us, as medical men, cease to regard hospitals as simply medical institutions—the amphitheatre, the centre round which the wards are to be clustered—and open our eyes to their other uses.

It is about two years since we noted the laying of the corner stone of St. Luke's hospital, in this city, an institution which is built by members of the Episcopal Church, and is under their control, though it will receive patients without reference to their religion. It is not yet ready for occupation, though it is nearly completed. The promise of its fine airy wards and its excellent arrangements, excite sanguine anticipations of its usefulness. A peculiarity of the building is, that between its wings a chapel is interposed, and its whole arrange-

ments contemplate not only the cure of the body but religious instruction. To this institution we look, as the only one in our city at present, likely to illustrate the advantages of returning to the original idea of hospitals. If the sisterhood to which allusion has been made as being already established in this city, is allowed to take the charge of its internal management, it will be indeed fortunate, and its patients must be benefitted by the care of such experienced ladies. Their training in their own infirmary would be brought into use in charge of this institution, and by the accessions which they may reasonably anticipate, they would be equal to the task, even if its two hundred beds are filled. Perhaps their success may urge others to emulate them, and take away the reproach which has been cast upon our countrywomen: as caring only for display or devoting themselves to the wild vagaries and unseemly exhibitions of "woman's rights conventions."

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*Academy of Medicine.*—The September meeting of this body was almost entirely devoted to a discussion upon the Report of the Building Committee. After a prolonged debate upon the ways and means proposed by the Committee, with many iterations and reiterations of the disputable points, by the few engaged in it, the Report was accepted, and the committee discharged. It was then resolved to appoint another Committee, whose duty it should be to see the instructions of the Report carried out. This new Committee is to be elected by ballot at the next sitting of the Academy.

The Report can be examined from two points of view. It has its serious and its ludicrous side. As a journalist, watchful of the interests of the profession, and looking with a dispassionate eye at every movement made for the improvement of our local societies, we must view it upon its serious side, and chronicle it with all becoming dignity.

Does the Academy need a Hall at the present time? In our opinion it does not. It has neither a valuable library, nor a priceless museum to preserve. Its infrequent sittings, as a body, or in its different sections, require no special building, the cost of which would ever be a burden upon its resources, while rooms sufficiently large for all its present purposes, can doubtless be obtained free, or for a small yearly rent, in the Cooper Institute.

We might recall the modest habitation of a similar society in a foreign city—a society whose labors are renowned—and institute a

comparison with the more pretentious aims of our own Academy. But there is no necessity for precedent. It is no reason that we should have a larger or smaller building, because a similar society in another city has a smaller or larger building, or even that we should have any building at all. Necessity and ability should be the guiding motives, not a vain ambition or servile imitation. But the Academy has necessities which it can relieve. It has neither library nor cabinet. These, to our mind, in the present state of our profession in this city, are far more deserving of the earnest attention of the Academy, than the subject of a building. To supply these wants would be worthy the immediate action of such a body. A quarter of the money proposed to be put into a building, would give us a library of which we might be proud, and which, upon the principle of accretion, would go on increasing, until there would be a necessity and a valid excuse, for a large fire-proof building. New York is deplorably deficient in medical and scientific libraries. There is no place where the medical scholar can consult such works as, from their cost or voluminousness, are not likely to be found in the library of any individual member of our profession. The New York Hospital Library is the only one of any magnitude to which access can be had. True, the Astor, and Society Libraries have, conjointly, a few hundred volumes of most excellent works, but the wealth of our medical literature is not by any means confined to the covers of so small a collection.

Again, a city such as New York, with its numerous charities, and their corps of medical officers, can furnish specimens of morbid anatomy, which would soon make a pathological cabinet second to none; while under the auspices of a large medical body, contributions to, and illustrations of physiology might be made which would soon place New York at the head—beyond dispute—of all American cities upon every branch of medical science. These, to us, are the wants of our city, and it is in the power of the Academy to supply them without laboring to obtain funds for monumental purposes, or groaning under the burthen of a heavy tax to support such an undertaking. If the learned Academicians can do without a library and a museum, it seems to us they can do without a Hall.

To close our own remarks, we venture to asert, that had the Academy at the present time a library worthy of the name, there would be no difficulty in obtaining from our merchant princes, and our State and city governments, a sum sufficient to erect as towering an edifice, and as glorious a memorial, as the most fastidious academician could desire.

The ludicrous side of the picture is so amusingly presented in the following pithy paragraph which we have clipped from a daily journal, that we have been tempted to append it to our own serious views.

J. H. D.

WISE ACADEMICIANS.—The Academy of Medicine has in its hands a surplus of funds amounting to the sum of \$3,000. What to do with it puzzles them immensely. They might divide it into premiums for essays on practical subjects. They *might* expend it on a volume of transactions, publishing a large supply of capital papers which it is but charitable to presume must have accumulated during the many years that they have got out no transactions. They might give a magnificent dinner, to which every regular doctor in town, who has no other method of getting a living than the practice of his profession, and who has never cast a reflection upon the Academy, *might* be invited—where champagne should flow free as water at a sheep-washing, and, after one member had tweaked another's nose, break up in a row, and all hands go home with the troublesome cash disbursed. But our academicians are not that sort of men. They have an ambition to make a nobler use of their \$3,000. They have determined to have an imposing Hall—not because they need one, but simply because it is a good thing to have. They have determined to build a worthy structure, which shall cost \$90,000, to accommodate their little library (of about one hundred volumes), their little book-case, their cabinet (of which the first specimen is yet to be put in pickle), and to furnish accommodations for their twelve meetings per annum, which are now amply accommodated in the University at a rent of \$75. To get the Hall built will be a pleasant undertaking, we fancy. After it is built, we presume it will be self-sustaining. The stores underneath it and the great rise of property in the locality (which is yet to be chosen), without a doubt, will furnish a fund to pay the janitors and insurance bills, and perhaps give a surplus for such current expenses as dinner parties to distinguished visitors, prizes for extraordinary papers, &c., &c. Good luck to the ambitious academicians.

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During the last Summer, we received a letter from a medical friend in the West, requesting us to send him Dr. Stewart's Prize Essay on Cholera Infantum. With a good deal of difficulty we obtained a copy, and not having previously had an opportunity to read it, we sat down to its perusal in the anticipation of a rare treat. The farther we read the more did our astonishment increase, that such doctrines should have been asserted by the author, and that they should have received the endorsement of the Academy of Medicine in this city. In truth, however, it is only the Committee who have endorsed it, the subject never having been brought up before the

Academy for discussion, although in fact, it has the credit of the endorsement of that body. What were the doctrines of the competing papers, who were their authors, or how many they were in number, we have no idea, but it seems to us, that they could not have maintained more incorrect ideas than those which this pamphlet enunciates. We had purposed to review the paper in order to discuss the topic, but while preparing what we wished to say, our western friend offered to review it for the MONTHLY, and we have the pleasure of laying his views of the disease before the profession in the present number. With his views we do not agree, dissenting especially from his commendation of the use of calomel, and desire to be understood, as not at all expressing our own views by publishing his article. Yet most of the points on which he dwells will be found tenable, and his experience in the disease makes them valuable. For Dr. Stewart, personally, we have only the kindest feelings, and we would gladly accord to the Academy the honor of having called out the best Essay upon the subject of Cholera Infantum, but it is, in our view, impossible to give them this credit. In what is here said or may be added, we wish to disclaim any other desire than that of an earnest, thorough discussion of the subject,—one which we consider of the greatest importance, and on which the ideas of practitioners are unnecessarily confused.

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LONDON, Sept. 12th, 1856.

*To the Editor of the American Medical Monthly :—*

DEAR SIR :—After a pleasant trip in the *Baltic*, I find myself again in London, with one day to spare before continuing my journey to Vienna, where I expect to be by the 17th instant.

I spent this morning with my friend, Benjamin W. Richardson, whose researches, proving ammonia to be the constituent of the blood, which kept it in the fluid state, has won for him the last Astley Cooper Prize. The Doctor showed me some very interesting and really surprising experiments, clearly proving the existence of ammonia in the breath. Among others, the following is worthy of notice : A glass plate was covered with a few drops of twice distilled hydrochloric acid. I then breathed upon it about 65 times, always taking a full breath and expelling it with force on the glass-plate, which was afterwards held over a gaslight to evaporate the fluid and induce it to crystallize. We then subjected it to the microscope, and found the most beautiful crystals of hydrochlorate of ammonia, which



resembled—though better marked—the crystals of hydrochlorate of ammonia which were placed on another plate in order to compare their appearance with those formed by the breath on muriatic acid.

The existence of ammonia in blood, is shown in this way : A receiver not entirely filled with blood, was covered by a plate wet with muriatic acid. The interspace being filled with the vapor of ammonia, forms then the crystals of ammonia. According to Dr. Richardson, the quantity of ammonia may be ascertained approximately, by using chloride of platinum, which will form with ammonia, yellow crystals, the weight denoting the quantity thus formed.

The existence of ammonia varies in the breath of different persons, according to the state of health, the same individual even, giving off sometimes more, sometimes less. More is given off fasting than during digestion, and the air last expelled from the lungs during each expiration, contains the greatest proportion. I take with me an extract of his researches not yet published, in order to communicate it to the Congress of Physicians at Vienna.

Little of importance is going on just now. Fergusson is grouse shooting in Scotland, and Sir Janies is watching the movements of the Queen in Balmoral ; Erichsen is rustivating at Scarborough, possibly trying experiments with the sponge on irrational animals, for he found out that he has to go down the throat, or suffer in the estimation of lovers of truth. The train by which I go to Paris leaves directly, and interrupts further communication for the present.

Yours, &c.,

I. GLÜCK.

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We are happy to chronicle the continued healthful condition of our city. Thus far we have had no unusual sickness, and with the exception of the mortality among young children, the weekly reports of the city Inspectors have compared most favorably with any previous year. Some portions of Brooklyn, however, have been very sickly, and the deaths from yellow fever large, in proportion to the numbers attacked. The few cases of this disease which have been seen in this city, have been satisfactorily proved to have occurred in individuals who had been previously exposed to the atmosphere of the infected district of Brooklyn, or of the vessels lying at Quarantine.

It is always the case that during the prevalence of sickness such as yellow fever, our profession suffers severe losses ; death enters our

ranks and carries off some of our most active members. The history of the progress of yellow fever in our sister city during this Summer, forms no exception to this rule. From the few physicians engaged in attendance upon those sick, many have been prostrated, and two have succumbed.

Dr. James Dubois and Dr. John L. Crane, of New Utrecht, partners in the practice of medicine, died within a few days of each other, of yellow fever, contracted while attending upon patients sick with that disease at Fort Hamilton.

From the first appearance of the fever they both devoted themselves unceasingly to the duties of their profession, answering the call of all alike, undaunted by peril and regardless of location or season, until finally, they too fell victims to the disease. D.

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*New Orleans School of Medicine.*—The abundant clinical advantages which the Charity Hospital of New Orleans furnishes, has doubtless instigated several of the attending Physicians and Surgeons of that Institution, to incorporate themselves into a School of Medicine, so as to make these advantages available in public instruction. Personally acquainted with most of the members of the Faculty of the new School, we are confident it will prove a worthy and generous rival of that already established as a part of the University of Louisiana, and that both, from a spirit of emulation, will succeed in offering better instruction than one alone. We wish the new School its just meed of success. D.

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*Dr. John V. Lansing*, of New York, has been appointed to the Chair of Physiology and Pathology, in the University of Vermont, which having heretofore been filled by other members of the Faculty, is now made a separate chair. D.

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It was Dr. Auder's Aqueous Solution of Iodine that was first brought to our notice—a preparation which as he states, he introduced to the attention of the Faculty as early as December, 1854.